The Builder.

VOL. LXXXVI.—No. 3199. MAY 28, 1904.

ILLUSTRATIONS

Proposed Façade for New Ironmongers' Hall, Fenchurch-street ..... Messrs. Hubbard and Moore, Architects.
"Coombe Field," Godalming ..... Mr. Gerald C. Horsley, Architect.
Waterworks Buildings, Clevedon, Somerset ..... Mr. H. Dare Bryan, F.R.I.B.A., Architect.
Ralston U.P. Church, Paisley ..... Mr. W. D. McLellan, Architect.
Additions to House, Kensington Park-road ..... Mr. R. A. Briggs, F.R.I.B.A., Architect.
New Screen, Dymock Church, Gloucestershire } ..... Mr. Roland W. Paul, F.S.A., Architect.
New Lectern and Reredos, Abbey Dore Church }

Illustrations in Text.

Monumental Headstone, Eastbourne Cemetery. Mr. H. H. Statham, Architect ..... Page 576
View of Wren's House, Botolph-lane, Eastcheap Page 579
Ironmongers' Hall, Fenchurch-street; as proposed to be re-built. Plan ..... Page 581
"Coombe Field," Godalming. Plans ..... Page 582
Waterworks Buildings, Clevedon. Plan ..... Page 582
"The Tarn." From the Drawing by Mr. W. G. Mein ..... Page 583
The Student's Column:—
Figs. 84 to 87 ..... Page 585

CONTENTS.

	PAGE
Fire and Explosion Risks	569
Workmen's Compensation	570
Siena at the Burlington Club	571
Notes	572
Recent Excavations in the Roman Forum	574
Competition for the New Stock Exchange, Manchester	575
Monumental Headstone, Eastbourne Cemetery	576
St. Mary the Virgin, Aldermanbury, Church	576
The Association of Municipal and County Engineers	577
The Architectural Association Summer Visits	578
"Wren's House"	579
Architectural Societies	579
Archæological Societies	579
Westminster City Council	580
Court of Common Council	580
Illustrations:—	
Ironmongers' Hall, Fenchurch-street	581
Illustrations (*contd.*):—	
"Coombe Field," Godalming	581
New Pumping Station, Clevedon, Somerset	581
Ralston U.P. Church, Paisley	581
House at Kensington	581
New Screen, Dymock Church	582
New Reredos and Lectern, Abbey Dore Church	582
Competitions	583
Books—T. D. Atkinson's "English Architecture"; S. H. Rowe's "The Lighting of Schoolrooms: a Manual for School Boards, Architects, Superintendents, and Teachers;" "Twelve Drawings by W. G. Mein, illustrating a Fragment by D. L. A. Jephson;" "The Modern Carpenter, Joiner, and Cabinet-maker," Vol. VII.; W. Diack's "The Art of Masonry in Britain"; R. A. Briggs's "Homes for the Country"; "Great Masters: reproductions in Photogravure"	583
Trade Catalogues	584
The Student's Column	585
Obituary	586
General Building News	586
Appointments	587
Sanitary and Engineering News	587
Foreign	588
Miscellaneous	588
Capital and Labour	590
Legal:—	
Workman's Claim for Damages against Employer	590
Point under the Metropolis Local Management Act	590
Action by Local Authority	590
Claim by a Darlington Architect	590
Patents	591
Some Recent Sales	591
Meetings	592
Prices Current	592
Tenders	593

Fire and Explosion Risks.

THE phenomenon known as "fire" is produced by rapid chemical reaction between certain forms of matter under certain conditions, while an "explosion" may be caused by the same reaction effected under other conditions, and at least an elementary knowledge of chemistry must be acquired before the laws which govern such reactions can be fully comprehended. The book on "Fire and Explosion Risks"* which has been written by Dr. Schwartz to meet the requirements of "non-chemists" will, however, enable even those altogether ignorant of chemistry to learn under what conditions the common articles of commerce take fire or explode, and what precautions should be taken to prevent the occurrence of the reactions which produce these phenomena.

The book is for the most part written in so clear and simple a style that any layman of average intelligence can readily understand it. Like other books of a similar character, it is apt to convey an exaggerated impression of the inflammable or explosive nature of comparatively harmless substances, and to occasion unnecessary anxiety. It is designed for the "use of fire insurance officials, fire brigade officers, members of the legal profession, law officers, councillors, factory inspectors, and factory owners," and it is probable that perusal of this book would induce some councillors and factory inspectors to at once issue rules of an unnecessarily vexatious character. For example, the stipulation that incandescent electric lamps must be protected by a double bulb and wire netting may be a reasonable requirement in the case of a celluloid factory, but would be altogether unreasonable if applied to every description of factory. Dr. Schwartz has, however, considered it his duty to draw attention to all the possible causes of fire and explosion, and it has therefore been impossible to avoid devoting a considerable portion of the book to the enumeration of some very remote dangers.

The chapters of direct interest to those concerned in the design and construction of buildings in general, and of factories in particular, are those which discuss fireproofing, lighting, heating, and the protection of buildings from damage by lightning; but the book also contains much information of general interest concerning the risks of fire outbreaks in buildings in which the various classes of commercial goods are manufactured or stored, and the precautions which should be taken to prevent such outbreaks.

In the chapter on fireproofing it is stated that of forty-four so-called antipyrenes (*i.e.*, fireproofing substances) tested by P. Lochtin, only the following twelve were found to be efficacious, viz., ammonium phosphate, ammonium sulphate, ammonium chloride, calcium chloride, magnesium chloride, zinc chloride, zinc sulphate, stannous chloride, alum, borax, boric acid, and aluminium hydrate.

Seventeen of the forty-four substances were found to actually favour combustion, and one of these was gypsum (calcium sulphate), but two pages further on gypsum boards for panels and roofing are said to have behaved exceedingly well when exposed to the action of fire. This apparent contradiction is due, no doubt, to the fact that when used as an antipyrene the gypsum is merely applied as a solution or paint to an inflammable material, and, although itself absolutely non-inflammable, it so injures the physical structure of the inflammable material that when exposed to fire the treated material offers a rougher and more exposed surface than the same material in its untreated condition.

The following are the first six of a list of nineteen general rules given for protecting specially dangerous establishments against "chemical" fire risks:—

(1) Granite, limestone, sandstone, and uncovered ironwork must be avoided in places where great heat may be generated and come into action. Ironwork (girders, pillars) must invariably be embedded in flame-proof materials.

(2) Cavities of any kind in roofs, walls, flooring, etc., must be filled up with uninflammable materials.

(3) Doors and windows must be made to open outwards. Where dangerous gases and liquids are produced or used there must be no communication, by way of doors or windows, with rooms containing open fires, lights, heating apparatus, or anything liable to generate sparks. Electroglass, a transparent fireproof variety of glass, is suitable for dangerous rooms, shops, show-windows,

* "Fire and Explosion Risks: a Handbook dealing with the Detection, Investigation, and Prevention of Dangers arising from Fires and Explosions of Chemico-Technical Substances and Establishments." By Dr. Von Schwartz. Translated by Charles T. C. Salter. London: Charles Griffin and Co. Ltd. 1904.

and stairways. Doors should be of wood only, covered on both sides with tinplate.

(4) Stairways must be closed in and constructed of flame-proof material.

(5) Steam, hot water, or hot air should be the sole means of heating employed. Where stoves are unavoidable, they must be fired from the outside; and the joints must be kept tight, to prevent air entering the stove from the room. The stove pipes must not be placed near any woodwork, and the mouths of the pipes must be covered with a grating.

(6) The only means of lighting permissible are electric incandescent lamps, with double globes and wire cover, or properly protected outside lights. All taps, switches, etc., for the lamps must be placed outside.

The remaining rules are for the most part of interest to works' managers only.

The author's references to high-pressure incandescent gas-lighting are faulty and misleading. It is stated that "a pressure of one atmosphere (*i.e.*, nearly 15 lb. per sq. in.) is sufficient to considerably increase the illuminating power of coal gas, especially in incandescent burners," and that "to maintain this pressure where a number of burners are in question the working pressure in the pipes has to be increased to two to seven atmospheres (29 lb. to 103 lb.)." As a matter of fact, many of the high-pressure gas lamps in use in this country work under a gas pressure of less than ½ lb. per sq. in., and in no case is a pressure greater than 2 lb. required. The Lucas lamp, which is mentioned as a high-pressure lamp, is not a high-pressure lamp, but takes its supply directly from the supply pipes under the normal district pressure of less than one-tenth of a pound per sq. in. Its high efficiency is due to the use of a long chimney and the restriction of the air inlet around the burner head, so that a much larger proportion of air is drawn into the mixing tube of the burner than is drawn into burners of the common type. So far as ordinary luminous flames are concerned, the lower the pressure the better is the lighting efficiency of the gas.

Referring to lighting by means of incandescent electric lamps, Dr. Schwartz states that "celluloid articles soon explode when exposed to the heat of the incandescent lamp," also that a sixteen-candle lamp will char cotton in ten minutes, and a very slight draught will then suffice to set the cotton on fire, the bulb usually bursting afterwards. He considers that "for these reasons the protection afforded by a second bulb becomes highly essential." In a draper's shop, where flannelette articles may sometimes remain in actual contact with the electric lamps, the use of lamps with double bulbs and wire netting constitutes, no doubt, a wise precaution, but in everyday life there must be a limit even to the precautions to be taken against fire risks.

On the subject of electrical installations the author makes some very sensible observations. He remarks that the ordinary public is not in a position to judge whether an installation is properly carried out or whether the material is good; consequently, when the purchase of electrical plant is in question, the usual tendency is to give the contract to the party making the lowest tender. The result of this practice is that the plant is a constant source of danger from fire and a risky object of insurance, the danger increasing as the plant grows old. He recommends a thorough inspection of the plant once a year by a competent electrical expert. The greatest source of danger is short circuiting, "for, out of 128 fires known to have originated in electric plant in 1898 and 1899, sixty-three, or nearly 50 per cent., were attributable to this phenomenon."

One of the most interesting chapters of the book is that which discusses dangers from lightning. The lower end of a lightning conductor should, in the opinion of Dr. Schwartz, be connected to the town water mains wherever possible, and this connexion should be made not merely by winding the conductor several times round the water pipe, but also by soldering with suitable solder. Conductors should not, he says, be connected to gas mains, because gas might be ignited at a leaky joint, or the lightning might be conducted to a neighbouring gas meter or gas engine. The latter suggestion leads one to inquire whether, in the case of conduction along a water main, a water consumer in the act of drawing water from a stand-pipe would not be liable to receive a shock. Where no water main is available it is recommended that the lower end of the conductor be connected to a metal plate about 6 sq. ft. in area and grounded about 6 ft. deep in the soil or in the soil water. The popular practice of grounding the conductor in a well is condemned as dangerous.

The area protected by a lightning conductor is, according to Dr. Schwartz, "the conical space equal in height to the distance between the ground and the point of the conductor, and with a base comprising a circle with a diameter twice the height of the lightning rod. The apex of this cone coincides with the point of the rod, and if the conductor be properly installed everything within this area will be protected. The height of the rod is determined by the length of the roof; if the latter be 45 ft. long, a 15-foot rod will suffice, but it must be erected midway along the roof. In the case of very long straight roofs, a number of rods must be provided at intervals not exceeding four times their vertical height; and the rods at each end of the row must not be more than one and a half times their own height away from the ends of the roof."

Attention is drawn to the fact that isolated buildings fitted with lightning conductors which have remained undamaged for years have suffered injury from lightning shortly after a water or gas supply has been connected to the premises, the lightning having jumped from the conductor to the water or gas pipes. It is stated that instances of this kind have occurred in the case of churches at Greifswald and Stralsund, school buildings at Itzehoe, and elsewhere; and that gas explosions have been produced by such lateral discharges. It is further asserted that "a whole house may be rendered fairly proof against lightning by completely insulating it, cellar and all, floor and walls, by a thick layer of asphalte." The phrase "fairly proof" is somewhat vague, and no estimate is given of the cost of insulating a house in this manner.

WORKMEN'S COMPENSATION.

THREE decisions on workmen's compensation require noting, two of them having an important bearing on wages and earnings under the Workmen's Compensation Act. In Midland Railway Company *v.* Sharpe the House of Lords have affirmed the decision of the Court of Appeal, and held that certain sums paid to a railway guard to meet his lodging or board expenses on occasions when his duties prevented him from returning to his own home were rightly computed as his wages for the purpose of assessing compensation. In James *v.* Ocean Coal Company the Court of Appeal have laid down a principle on the question of assessing compensation where an injured workman is capable of earning something after an accident. A workman employed as a hauler in a coal mine suffered an injury by accident at a time when his earnings, including certain percentages, amounted to 34s. a week. Whilst incapacitated he was paid 17s. a week by his employers, but eventually he was offered and was able to undertake work in the lamp-room at 29s. 5d. At that time the percentages paid to men in his old employment had dropped, and had he been still engaged as a hauler he would only have made 29s. 5d. His compensation was stopped when he resumed work, and he applied for arbitration, claiming the difference between 29s. 5d. and his old wages, 34s. The county court judge refused to award any sum, since he laid it down as a principle that the wages on which the compensation was originally fixed must be treated as subject to the variation of wages earned by persons engaged in similar work, and that hence in this case there was no "difference" to award. The Court of Appeal held this enunciation of the principle to be erroneous, since the maximum sum originally fixed is entirely independent of subsequent fluctuations. It is to be observed that when an arbitrator has to determine what is the difference between the weekly earnings before the accident and the amount the man is able to earn after the accident, under schedule 1, par. 2, of the Act he is vested with an absolute discretion, and hence it was only in laying down a fixed principle that he was wrong, and not in refusing to award any compensation in such circumstances. The third case, Stephens *v.* Dudbridge Ironworks, is one of extreme importance to employers who wish to avoid litigation by effecting a compromise. The injured workman was an apprentice under age, living with an uncle, who stood *in loco parentis*, but not as legal guardian. The employer, through the uncle, agreed to pay compensation under the Workmen's Compensation Act, and took a receipt from the infant purporting to be an election on his part to receive compensation under the Act in full satisfaction. Subsequently the uncle was duly appointed guardian, and an action was brought at common law claiming damages for the

injuries sustained in the accident. The Court held that, being an infant, and the contract to receive compensation instead of damages not being for his benefit, he was not estopped from bringing his action, as he would have been had he been of full age, by virtue of section 1, 2*b*, of the Act.

SIENA AT THE BURLINGTON CLUB.

SIENA seems to be in the air at present. Mr. Douglas Langton's lectures some little time ago at the Royal Institution, to which we referred at the time, presented an excellent historical and critical sketch of the architectural art of Siena, and of the character of the people who made it. There is at present at Siena itself an exhibition of her ancient art, of which we shall have something to say on another occasion; and the Burlington Fine Arts Club has collected in its well-known upper room what can be got together from English owners to illustrate Sienese art. This exhibition, though small, is a very representative one. The works are arranged as nearly as can be in chronological order, and we follow the course of Sienese art from its earlier purely decorative paintings, with their flat gilt surfaces, to the more free and pictorial style of Benvenuto and Beccafumi.

It is not an exhibition to arouse popular enthusiasm. Sienese painting, in its early and more characteristic forms especially, appeals to an acquired taste; its style and its interest are so totally different not only from picture-painting as a modern art, but from the better-known forms of early Italian Renaissance art. Giotti is a familiar name to many who have hardly heard of his Sienese contemporary Duccio di Buoninsegna, and his works have a natural and dramatic expression which many can understand who would find the Sienese painter only interesting, if at all, as a historical study. But that is the value of an institution like the Burlington Club; it brings before us works for which there would be no demand in a popular picture-gallery.

The little walled town on the top of a rock, which has attracted so many lovers of ancient art of late years, seems indeed to have been as much shut up and fenced in æsthetically as it was materially and politically. Her art pursued its own path, and dwindled from inanition and isolation just as the great art of the Italian Renaissance was reaching its largest development. To come into the Burlington Club room is like going into a separate and obscure compartment of art history, where things are attempted and judged by a special standard quite apart from that which rules in the great world of Renaissance painting. Stiff and formal is the art shown here; that of producing small pictures of sacred subjects, rather symbolical than illustrative, and decorated with gold backgrounds and nimbi so as to produce almost the effect of a kind of jewellery. Beauty of a kind there is in many, not in all; for, at the risk of rousing the contempt of the amateur in things of Siena, not a few of the works here are interesting, to the non-collecting mind, more as curiosities than in any other sense. In the preface to the catalogue this restricted interest of Sienese art seems to be recognised, and the reader prepared for it in advance, by the remark that "Men will always do them less than justice until they realise that the Sienese painters simply did not choose to follow the broad road trodden by their fellow artists." We reject the conclusion. Our opinion is that the earlier Sienese painters were a set of men isolated (to a great extent) by circumstances, and confined within a narrow round of their own, from which they could not escape. That they did not even try may be true enough, but we do not know that they were any the more praiseworthy for that. Among the later painters we do indeed see evidence in this room of a certain choice in style, for if we compare Benvenuto's (1470-1524) four scenes from the Life of Christ, No. 54 in the catalogue, with his "Portrait of a Lady" (52), it is difficult to realise that they are by the same painter, the Christ scenes being purely conventional painting in a stiff style, and the portrait showing how near the artist could go to nature if he chose. But among the paintings of two centuries earlier there seems no evidence of any power but that of painting missal-like miniatures of a decorative stamp. They shut themselves up in this, but they have left us a little curiosity-shop of art which has its own peculiar interest.

Among the examples of Duccio represented are four scenes from the Life of Christ: The Woman of Samaria; the Temptation on the Mount; the Raising of Lazarus; and "Follow Me, and I will make you Fishers of Men." There is a naïve attempt in all these to tell the story in a plain and recognisable manner. In the "Lazarus" the nearest figure to the resuscitated corpse puts his drapery to his nose, reminding one of a similar homely incident in Orcagna's fresco at Pisa. Architectural backgrounds play a considerable part in the scenes, especially in the "Temptation," and are of some interest, as being no doubt based on what the painter was in the habit of seeing around him. The best work of Duccio that is exhibited is however the "Crucifixion" (4), which belongs to his last period, and shows a considerable advance in the drawing and grouping of the figures; the figure of the centurion especially is noticeable, and might be assigned to a much later date if seen alone. The arrangement of the six very conventional angels in the sky around the head of the cross reverts to the purely decorative conception of a scene. In several of the paintings of this period, by Duccio and others, the folds and creases of the drapery are lined out and modelled by gold lines; the expression in the catalogue in regard to one of these, "a dark blue robe heightened with gold," is hardly the right way to put it; the gold lines are not a decorative treatment of the drapery, they are the method employed for modelling it, in order to combine drawing with decorative effect.

The curious picture, attributed to "the School of the Lorenzetti" (16), in which a number of scenes from the lives of hermits of the Thebaid are combined into one painting, only linked together by the foreground landscape with its river, though anything but beautiful, is worth studying as a curiosity, and is full of odd illustrations of mediæval religious legend. Among the curious incidents is the representation of an angel as a nude figure with a gold nimbus; the only instance we can recall of a nude angel in early art.

A quarter of a century or so later we come on the examples of Simone Martini, the most characteristically Sienese of all the artists of Siena.* His "Christ Found in the Temple" (18) is a fine example of a form of art which may be said to be midway between painting and decorative illumination; a cabinet picture in which sumptuous decorative effect is kept in view in every detail, not excluding, however, grace and beauty in some of the figures. The picture is in its original very well-preserved Gothic frame, with a cinquefoiled arch in low relief forming a suggestion of a canopy over the picture. A still better example of Martini is the picture called "Scenes from the Life of Christ" (21), in which the two figures representing the Annunciation, the angel in a panel on one side of the frame and the Virgin in the opposite panel, are of real beauty and expressiveness. Here again we see the practice of lining out the drapery folds with gold.

Space will not permit of our doing more than mentioning a few other of the most interesting among the works exhibited. The Annunciation by Giovanni di Paolo (1403-1480) is noteworthy, among other things, for the curious and elaborate architectural details—the gables in concave curved lines with a gold boss in each tympanum, with the careful effort to draw them in perspective, and the canopy or roof of segmental section, divided into small squares of alternate green and gold, and each ornamented with a square flower like the "dogtooth" ornament of Early English architecture. In the picture of "St. Bernardino Preaching," by Vecchietta (1412-1480), we come on entirely Renaissance architecture—pilasters with gilt classic capitals, gilt consoles, etc.; though this is much the same date as Giovanni di Paolo's much more Gothic architecture just referred to. In the "Flagellation of a Saint" (38), of the School of Matteo di Giovanni (1430 *circa*-1495), we have a most orderly Renaissance classic treatment, niches with pilasters and small pediments, etc.; while in another interior of the same school and date (43) there is a curious mixture of orthodox classic detail with long clustered Gothic shafts. The architectural student will notice the row of wide round-arched niches of almost purely Roman character which form the base of the architectural composition. The "Madonna and two Saints" (48), by Pietro di Domenico (1457-1501), is noticeable for the tender expression in the graceful head of the virgin.

The later works have less of interest, since the peculiar Sienese style of decorative treatment has been abandoned, while the freedom and beauty of the greater Renaissance are not reached. The large "Venus" of Girolamo del Pacchia (1477-1535) is an ugly nude,

* Simone Martini, it may be as well to observe, is the painter who, owing to a mistake of Vasari's, who confounded him with Lippo Memmi, was known in art histories till a comparatively recent period as Simone Memmi. We have found the mistake still lingering in an Encyclopædia published only ten or fifteen years ago.

C.

with nothing to recommend it. There is spirited action in the "Flight of Clœlia," by Beccafumi, the most prominent of the later names (1479-1549); but then for the kind of thing it is not good enough. The Roman background, with the naïve representations of the Castle of St. Angelo and the Colosseum (neither of which of course existed at the supposed date of Clœlia), is interesting as an exemplification of the historic confusion of mind in regard to ancient Rome.

There are two cases of objects illustrating the minor arts in Siena. Among these are to be noted some curious triangular tiles from the original pavement of the Piccolomini Library at Siena, bearing the Piccolomini cognisance of a yellow crescent on a blue ground; a magnificent illuminated initial letter on vellum (case A, 10); a circular dish of rich and unusual ornament (A 12); an illuminated frontispiece of the Book of the Biccherna for the year 1460 (A 15); and some interesting porcelain work and painted wooden panels in case B. In the room downstairs is a splendid frame in carved walnut wood, about as fine an example of wood-carving as could be seen, attributed to the school of Antonio Barilli. This is lent from South Kensington, and may be known to some of our readers already.

The greater part of the collection, however, consists of work not generally accessible or known except to collectors and students. "Do you know anything of early Sienese art?" we asked a friend a day or two since. "Not now," he replied, "but I shall next week; I am going to the Burlington Club." That is the real value of these exhibitions at the Burlington Club; they afford opportunity for the public—those who care to seek admission—to extend their knowledge of art-history; an opportunity greatly aided in this instance by Mr. Langton Douglas's learned and interesting treatise which forms the preface to the catalogue.

NOTES.

A New Nile Bridge.

OWING to the greatly increased traffic across the Nile at Cairo the bridge known as the Grand Pont de Kasr-en-Nil has for a long time been inadequate for the requirements of the city. A scheme was prepared some time ago for substituting a steel superstructure for the existing iron span so as to increase the width of the bridge by nearly 20 ft., but nothing has been done in this direction up to the present. A still more useful project, however, is now on the point of being commenced—namely, the construction of new cross-river communications to connect Old Cairo with Ghizeh. The plans for this undertaking were prepared in 1902 by the instructions of the Public Works Ministry, and the works, which are about to be taken in hand, will include a bridge 500 metres long by 20 metres wide, spanning the main branch of the Nile between Ghizeh and Roda Island, and two subsidiary bridges 85 metres long by 12 metres wide between Roda Island and Old Cairo. New roads to the length of more than 2,000 metres are also to be constructed on the island, and there is no doubt that the new communications will be much appreciated by residents and visitors alike. The western abutment of the main bridge will be at the commencement of the Pyramids Road, and we presume this point will ultimately be connected by a new tramway route with the central quarter of the city.

Lake Cheesman Dam.

NEXT to the new Croton dam the most important work of the kind in the United States is the dam intended to create the Lake Cheesman reservoir for the water supply of Denver, Colorado. It was designed as a gravity dam, but owing to the configuration of the gorge the natural form of structure for the site is curved in plan. As the full section of a gravity dam could be retained in conjunction with the arched form, and without involving additional masonry, the up-stream face was curved to a radius of 400 ft. The dam is built of granite masonry laid in Portland cement mortar, and the foundation is solid granite rock. Measured from the average level of the foundation to the roadway, the total height of the dam is 227 ft., the thickness being 176 ft. at the base, and 18 ft. at the level 190 ft. above datum, this thickness being maintained to the top of the structure. It is estimated that the pressure against the dam will be that due to a depth of 224 ft., which considerably exceeds the depth of water against any previously built structure of the kind. Compared with such well-known examples as the Villar, Periyar, and Furens dams, this work seems somewhat slender, but, on the other hand, the base being considerably longer than the top, the small radius of curvature, and the superior quality and weight of the masonry constitute elements of strength that should not be overlooked.

"Tenement Factories."

THE question of what constitutes a "tenement factory" was again before the Courts in the case of Brass *v.* London County Council (20 Times L. Rep. 464). Tenement factories are defined by the new Factory and Workshop Act, 1901, as factories "where mechanical power is supplied to different parts of the same building occupied by different persons for the purpose of any manufacturing process or handicraft in such manner that these parts constitute in law separate factories," and the meaning of this section has been interpreted to include only tenement buildings used as factories when the mechanical power is derived from one source. The building in question consisted of three floors and a basement, and was occupied by a paper-cutting company which supplied its own mechanical power, manufacturers of paper and wood boxes who did the same, and by Brass, who on his part of the premises used no mechanical power. The two businesses each supplying themselves with separate mechanical power rendered this not a factory to which section 14, which provides for means of escape in case of fire, had application. This decision practically follows that in the case of Toller *v.* Spiers and Pond, on which we commented in our issue of December 27, 1902, and seems to direct attention to a flaw in the Act, since there can be no less risk, but rather greater danger, from fire where mechanical force is being generated in separate parts of the building than when it is drawn from one source, and seeing that such undertakings are becoming more common in these days of larger buildings, and the larger the building the greater the risk of fire and the increased probability of mechanical force being separately generated on the floors in different occupation, all such buildings should certainly be brought within the ambit of the Act.

Gas Supply to Successive Tenants.

THE case of The Gas Light and Coke Company *v.* Cannon Brewery, commented upon by us in our issue for March 21, 1903, has been carried to the House of Lords, and the decision of the Court of Appeal has been reversed, and the case of Gas Light and Coke Company *v.* Meade, decided in 1876, has been reinstated. The question decided is one of general importance. The Cannon Brewery had purchased the interest of a former tenant in certain premises, and were carrying on his business there. The former tenant had left his gas rate unpaid, and the Gas Company were trying to render the Brewery Company liable for these arrears. The Gas Company based their claim upon section 18 of their Act of 1872, which provides—

"In case any consumer leave the premises where gas was supplied to him without paying the rate or meter rent due from him, the company shall not require from the next tenant of the premises payment of the arrears so left unpaid unless the incoming tenant agreed with the defaulting consumer to pay the arrears, or unless the incoming tenant shall continue the trade or business of the outgoing tenant, and shall have paid to ——, the outgoing tenant, a consideration for so doing, but the company shall, notwithstanding any such arrears, in the absence of collusion between the outgoing and incoming tenant, supply gas to the incoming tenant as required by this Act on being required by him to do so."

The Brewery Company did not require any gas to be supplied, therefore the Gas Company were unable to bring any compulsion to bear by cutting off the gas supply, but the Court of Appeal held that since the requirements of the section as to carrying on the business, etc., were fulfilled, in this case the Gas Company could "require payment" of the arrears by action against the Brewery Company. The House of Lords have reversed this decision in considered judgments, the ground of which may shortly be stated to be that unless the incoming tenant "requires" the Gas Company to supply gas the section does not apply at all. Where however the incoming tenant desires a supply of gas his position may not be so satisfactory, as the Gas Company may then make a contract with him making the supply conditional on his paying arrears, if he is continuing the business within the section, or even if he is not may possibly cut off the supply. This latter point remains in doubt; it was so decided in Meade's case, but this was overruled in the Court of Appeal. The Lords have reversed the Court of Appeal, but on another ground, and Lord Davey specially states this question to be left open, although he intimates that Meade's case may have rightly decided it. Incoming tenants requiring gas had better make agreements with the outgoing tenant as to arrears if they continue on

his business, until such time as the law on these matters is made to accord a little more with justice and equity.

Radium.

ON Friday evening of last week Professor Rutherford, of Montreal, gave a most interesting address at the Royal Institution on "Radiation and Emanation of Radium." The lecturer first gave a brief summary of the properties of radium. It is known that it is continually giving off three kinds of radiations, and an emanation which is a gas-like substance. The *alpha* rays carry positive charges of electricity, have very little penetrative power, and only suffer deviation when passing through very strong magnetic fields. The *beta* rays have much greater penetrative power, carry negative charges of electricity, and are easily deflected by a magnet. The *gamma* rays are not affected by a magnet at all, and have very great penetrative power. They seem to be very similar to Röntgen rays. The emanation given off by radium behaves like a gas, and is condensed by cold. When a radium salt was dissolved in water this emanation was liberated, and it possessed 75 per cent. of the characteristic powers of radium. Professor Rutherford stated that this emanation from radium was not a stable element, but was continually changing into something else. Under certain circumstances some atoms of the radium became unstable and split up, being shot off at great velocities. These fragments of atoms formed transition elements. He calculated that in 50,000 years a mass of radium would have ceased to exist, the fragments of the atoms that once composed it forming new substances. Sir William Ramsay has shown that the radium emanation produced helium, and there was now considerable experimental evidence proving that the atoms forming the alpha rays were atoms of helium. The lecturer was of opinion that radium was itself a transition element, and so must be produced from some other element. The amount of radium in the crust of the earth was sufficient to account for the rise of temperature as we go downwards. Lord Kelvin's limit as to the age of the earth, therefore, which was deduced from considering it as a sphere cooling in space, would have to be modified. This would enable the physicist to grant the biologist and geologist the lengthy periods they require for evolution.

The Whirling of Shafts.

IN a valuable paper read to the Physical Society on March 11, and published in the *Philosophical Magazine* for May, Dr. Charles Chree, F.R.S., has discussed the problem of the "whirling" of shafts, and has given what appears to us to be the true solution. The phenomenon of whirling is well known to electricians and also to the manufacturers of high-speed engines. When an engine and a dynamo are directly coupled together there are many cases on record of the shaft fracturing at a particular speed, although a very large factor of safety had been allowed. In most cases no flaws in the metal at the fracture could be discovered, and the orthodox explanation of the phenomenon was that the period of some oscillation of the crank shaft synchronised with a periodic fluctuation of the electrical load on the dynamo, thus setting up resonance. Professor Dunkerley has discussed the problem very fully, both theoretically and experimentally, in a lengthy paper published in the Philosophical Transactions for 1894. Dr. Chree shows that the very lengthy formulæ given by Dunkerley can be simplified, and he gives one or two simple formulæ that will be most useful to the engineer. The method he adopts of getting these formulæ is due to Lord Rayleigh, and the result is a triumph of mathematical ingenuity. We see that the explanation of whirling is extraordinarily simple, and the wonder is that apparently no one has ever thought of it before. When a shaft held at one or both ends is acted on by forces tending to bend it, on the removal of these forces it tends to return to its original straight position; in doing so it overshoots the mark, and so a lateral vibration is set up. If the shaft be rotating round its longitudinal axis and be displaced laterally, the elastic forces tend to bring it back to the undisturbed position, but the "centrifugal forces" have exactly the opposite effect; they diminish the righting forces, and so make the vibrations slower. In the particular case when the period of rotation of the shaft equals the period of its lateral vibration, then the righting power vanishes and stresses of any magnitude can arise. When the rotors of the dynamos or the fly wheels or pulleys fixed on the shaft are heavy the period of the lateral vibration is low, and experience has proved that the whirling that ensues can fracture any shaft, however strong. We had occasion two years ago to study several cases of shafts breaking due to whirling, and Dr. Chree's formulæ seem to us to be in exact accordance with practical experience.

London Medical Officer's Report.

THE Report of the Medical Officer of Health for the City of London, for 1903, deals of course very largely with matters which do not come into our province—purely medical questions of the adulteration of food, provisions in regard to infectious disease, etc. Among points which affect the construction of buildings, the subject of the kitchens of restaurants is considered at some length, and the medical officer expresses the strong opinion that underground kitchens in hotels and restaurants should be discountenanced, and that if the London County Council General Powers Bill 1904 comes into operation, it would be to the public advantage to abolish underground kitchens by law, at all such places. On this subject the medical officer remarks—

"Without mechanical means, it is almost impossible to properly ventilate a kitchen placed in a basement. In many cases the ventilation has to be partially obtained by means of open gratings on the footway pavement—indeed in some instances nothing else can be had. As a consequence, mud, filth, and dust finds access to the kitchens—indeed, it is a common thing to observe marks of expectoration through these gratings, one occupier even being obliged to attach a brass notice requesting the casual passer-by not to spit down one of the openings. Others attach movable trays beneath, but this only partly obviates the evil."

The want of proper sanitary accommodation for both sexes, in connexion with hotel kitchens, is also strongly commented on. Complaints are also continually received of want of proper sanitary accommodation in connexion with offices, especially in cases where women are employed as clerks. These points should be taken into consideration by those who are planning and erecting hotels, restaurants, or offices.

Harcourt House, Cavendish-square.

THE freehold of No. 19, on the west side of the square to which it has a frontage of some 154 ft., with a depth of 112 ft., is offered for sale. Formerly known as Bingley House, it was erected (of stone) in 1722-3 for Robert Benson, Lord Bingley, after whose death in 1731 it was purchased by Simon, second Viscount and first Earl Harcourt, who sold it to William second Duke of Portland. Amongst the King's collection of drawings in the British Museum is preserved a copy of J. Rocque's print, showing the original design:—

"As it was drawn by Mr. [probably Thomas] Archer, but built and altered to what it now is by Edward Wilcox, Esquire."

The square was laid out as Oxford-square in or about 1717, on land in Marylebone-fields that belonged to the dower which Lady Henrietta Cavendish Holles brought, in 1713, to her husband Edward Harley, second Earl of Oxford and Mortimer. The stabling and offices at the rear, in Welbeck-street, of Harcourt House were built by Samuel Ware. Whilst the mansion, latterly occupied by the Marquis of Breadalbane, has been shorn of the somewhat forbidding features which were commented upon in the "New Critical Review of the Public Buildings in London," 1736. Its high front wall, courtyard, and general air of seclusion give it an unusual aspect, which is less common in London than in the older aristocratic faubourgs of Paris. The house is plotted in Rocque's map of 1744-6. For some time it had no neighbour in the square other than the two wings (on the north side) attributed to Edward Shepherd (though some say by John James) of the mansion of which the King's Library contains a print by H. Hulsbergh, dedicated to the Duchess of Chandos and lettered:—

"The elevation of a new house intended for His Grace the Duke of Chandos, in Marybone Fields. Designed by John Price, Architect, 1720. J. Price, Inven. et Del. H. Hulsbergh, sculpt."

Price's elevation does not show the two wings. The one at the corner of Chandos-street appears in T. Malton's aquatint of July, 1800. Both have been rebuilt since.

Changes in Lothbury and Old Jewry.

THE new premises which have just been completed, after Mr. Arthur Blomfield's designs for the London and Provincial Bank (and described in our number of April 30), stand upon the site of a portion of the block of five houses, New Bank-buildings, erected at that corner of Prince's-street and Lothbury in 1808-10 from designs by Sir John Soane; the houses, of which Nos. 1 and 2 remain, with their façade now broken, were built when he widened and straightened Prince's-street, taking some of the ground for his enlargement of the Bank of England. In the Soane Museum is a set of plans, signed by him, and entitled "The Five Houses in Prince's Street called 'New Bank Buildings,' erected 1807-1810 upon ground recently bought

by the Bank of England." The land was bought for 20,000*l.* from the Grocers' Company. The same collection contains some variant designs for the premises No. 19 in Old Jewry, which completed the block on the west side. No. 19, Old Jewry, was built by Soane in 1818-9 for the National Debt Redemption and Life Annuities business. It has lately been rebuilt by Mr. Arthur Blomfield, Messrs. W. Cubitt and Company being the contractors, for occupation by the Public Works Loan Office; the now vacant space between No. 19, Old Jewry, and No. 3, New Bank-buildings, is reserved for a new National Debt Office, in complement of Mr. Arthur Blomfield's scheme for the entire group of offices. Soane designed also (1811) Thellussons' banking-house in Meeting House-court, named after the Meeting House, which, with three other messuages and some almshouses, formed the site of No. 19 and a space at the rear. The almshouses had been founded there with a bequest in 1551 by Dame Elizabeth Morys of her property in the parish of St. Olave Jewry to the Armourers' and Braziers' Company, who sold the Morys trust estate in that quarter for 10,000*l.* to the Governors of the Bank of England. Soane's plans plot the sites of the Grocers' (former) Hall and garden, the old Meeting House, the court (formerly Windmill-court), and the almshouses in Old Jewry.

Morland's Pictures at South Kensington.

THE collection of pictures in the large upstairs gallery at the Indian Museum testifies that poor, besotted George Morland must have been a diligent worker in his sober intervals, or that he worked pretty fast. As an artist, he was well worth commemorating by a centenary exhibition, and the collection shows more variety of subject and purpose in his pictures than he is generally credited with. The best, however, are of the class of subjects by which he is best known; farmyards and farm animals, horses more especially. Among the best of these are "Winter" (24), in which the white cow foreshortened is admirable; "The Blind White Horse" (27), unable to find the water-trough, which in its way is quite pathetic; "Horses in a Stable" (64); "The Piggery" (69); and the life-size painting of a dog (76). The pictures in which landscape forms an important element show that Morland had an intuitive feeling for composition, though the treatment of foliage, both in regard to colour and detail, is very mannered; a point, however, in which greater painters of the same period can keep him in countenance. There are two or three seashore scenes, which have all nearly the same composition (Nos. 8, 17, and 60); the large one entitled "Wreckers" (17) has a fine wild effect of storm in it, but the treatment of the sea is poor. One of the best and most effective pictures of Morland's favourite class of subject—"The Catastrophe"—is not in the collection; it represents with great force and spirit the collapse of a farmer's cart and all its passengers by the fall of the horse. The picture was at one of the Burlington House loan exhibitions a good many years ago, and we were rather disappointed not to find it in the South Kensington collection.

RECENT EXCAVATIONS IN THE ROMAN FORUM.

The news of the discovery within the large concrete base which probably belongs to the equestrian statue of Domitian* (*Builder*, January 2, 1904, p. 3) of a block of travertine containing, in a nearly square cavity, five specimens of prehistoric pottery, created a considerable sensation in archæological circles. Upon March 9 Commendatore Boni, in searching for traces of the inaugural ceremonies which he supposed had been observed when the monument was dedicated, came upon a slab of travertine embedded some 3 ft. deep in the concrete of the base. The slab was 4 ft. square and 1 ft. thick, and on its removal the next day it was found that it covered the block of travertine already referred to, which was of the same dimensions, and contained, in a cavity of slightly trapezoidal shape, the sides of which are each 2 ft. in length and the depth 1 ft., five pots, which resemble very closely those which have been, and are still being, discovered in the prehistoric cemetery close to the temple of Antoninus and Faustina. One of them is globular, red, with striated sides; another is a small black amphora with a double spiral incised decoration; two others are small black cups, with incised decoration; while the fifth is, to borrow an everyday analogy, of the shape of a clotted cream pot, yellowish, with bands of red painted upon it, and one small handle in the upper part.

The vases were left *in situ* for a few days, and then removed one by one in the presence of the King of Italy, who has taken a considerable interest in the present excavations. In the largest was found a piece of unrefined gold, but a few pieces of pitch and some fragments of tortoiseshell were the only other objects that were detected in the earth in which the vases were embedded.

The meaning of the discovery is anything but clear. Commendatore Boni believes the vases to have been placed in the stone at the ceremony of the inauguration of the monument—the laying of the foundation stone, as we should call it—and the custom would thus be one of those which has come down to us from very early times. It is perhaps curious that no "coins of the realm" should have been found; copies of contemporary newspapers we could not expect. But there are more serious objections. In the first place, could an equestrian statue of an emperor be regarded as a sacred building, and therefore be "inaugurated" with solemn rites? And, in the second place, how came these prehistoric vases to be available at the time of Domitian?

We should have to suppose that a store of them was preserved by the priests for use on such occasions. We know that the *simpuvium Numæ* (King Numa's sacrificial bowl, which was made of rough earthenware, and black in colour) continued to be an object of veneration for many centuries, and the brotherhood of the Arvales, one of the most ancient of the priesthoods, prayed and sacrificed to vases which had come down to them from remote antiquity. In fact, when excavations were made on the site of their sacred grove in 1868, some fragments of undoubtedly prehistoric pottery were discovered which may have belonged to some of these very objects of veneration.

We are told that they were extremely like the specimens which had come to light in the primitive cemeteries of the Alban Hills, and utterly dissimilar from the pottery of a later date, which was habitually found in the excavations of Rome and its neighbourhood. (It is, however, to be noticed that they were not found in any part of the sacred buildings, but in an underground chamber, the character of which is not more nearly defined.)

This fact is of considerable weight in connection with the present discovery, but there is a certain amount of difference between the preservation of prehistoric pottery as an object of worship and the existence of a stock of it which was available for use when required for inaugural purposes. If, on the other hand, we suppose that vases of this primitive nature were still manufactured (even for sacred purposes alone, for which in several cases, *e.g.*, in the worship of Vesta, the use of earthenware vessels always formed part of the prescribed ritual) in the Ist century, A.D., we are in danger of upsetting the whole of our chronological system of the development of the potter's art.

It is not that the secret had necessarily been lost. Commendatore Boni, after many experiments in order to find out how the ancients had made it, was able to imitate the prehistoric pottery almost exactly—so exactly in fact, that he was obliged to date the pots he had made in order to avoid confusion! But such a survival of a primitive style of manufacture would be difficult to admit, from what we know of the development of art and decoration in Rome.

Another theory has been suggested by Professor Barnabei, the ex-director of the Department of Antiquities, in one of the daily papers (*Giornale d'Italia*, April 2), and merits consideration. Further investigations on the south-west side of the base have revealed the presence of a portion of a human skeleton at a very considerable depth below the level of the Forum of the Imperial time, and below many different strata, each representing a period of human life, so that it would seem that here there had been a burial-ground at some remote date. Is it not possible that in the course of the construction of the base the workmen came upon a prehistoric tomb, and, out of respect for the dead, enclosed the vases from it in the solid concrete mass? But, it may well be asked, what happened to the remains of the deceased? for no ashes and no bones were found in any of the vases. Professor Barnabei's explanation, therefore, cannot be treated as altogether satisfactory; but, as we have seen, Commendatore Boni's is open to certain objections also. In the meantime, the discovery remains one of the most mysterious of the many inexplicable finds that have been made during the present excavations.

Between the base of which we have been speaking and the temple of the deified Julius Cæsar there has come to light the concrete base of another statue, of similar construction. In both cases the concrete, which was below the ground level, has been allowed to set between planks supported by vertical beams, and has not been faced in any way. Remains of the wood itself may, in fact, often be seen in such concrete constructions, and the marks it leaves are always clear.

The new base stands in front of the temple of Castor and Pollux, where Livy (IX., 43) tells us that an equestrian stature was erected in honour of Quintus Marcius Tremulus, consul in 306 B.C., and conqueror of the Hernici, a tribe who dwelt in the mountains to the south-east of Rome. There are no remains, however, at present to be seen of this early monument, though the excavations are by no means complete, and have not yet been carried to any great depth. What is visible at present is merely the upper portion of a concrete base of the Imperial period, perhaps, on which rest some blocks of travertine, belonging to some still later restoration, as the concrete has been cut away to take them. There are also one or two of the marble blocks of the actual pedestal.

In the course of the excavations a fragment of a marble architrave, bearing the words "Profelicitate," came to light, which fitted on to another fragment previously discovered, with the names of the Emperors Arcadius and Honorius, and of Aurelius Symmachus, the well-known statesman of the last quarter of the IVth century, A.D., who dedicated the monument to which the architrave belonged.

The south-east end of the Forum of the late Republic was marked by a road, traces of which have been found beneath the foundations of the temple of Julius Cæsar, erected after his death, and under those of the Arch of Augustus, which stood between this temple and the temple of Castor and Pollux. The road would have passed just south-east of the last-named temple, between it and the *Lacus Juturnæ*—the basin in which the sacred spring of Juturna still rises.

Immediately to the north-west of, and parallel to, this road ran a line of those small rectangular pits lined with slabs of stone which have been found in other parts of the Forum, and are believed to have some ritual significance. Here, as on the south-west and north-west sides—in front of the Basilica Julia and the Rostra respectively—they may well be held to mark the limits of the open area of the Forum of the time of Julius Cæsar and Augustus, just as those which run in three parallel lines near the

* The discovery of a hole in the centre of the base, which would have served to contain a support for the body of the horse, has rendered the attribution of the base to this statue more probable, for hitherto it was a little hard to see how the three shallow cavities in the blocks of travertine, in which the hoofs were supposed to have been fixed, could have been a sufficient foundation for so great a weight as a bronze equestrian statue about six times life-size.

boundary between the earlier Comitium and the earlier Forum preserve the older (solar) orientation. Seven of them have so far been discovered, of which two are beneath the foundations of the temple of Cæsar.

In the Basilica of Constantine the marble pavement is now being exposed to view, and, though it is much damaged, several pieces of it, composed of elaborate patterns of different-coloured varieties, are visible. But it is the primitive Forum and the cemeteries that preceded it that are now the object of the greatest interest; and it is difficult to foresee what discoveries the future may have in store for us. The exploration of the necropolis close to the temple of Antoninus and Faustina is not yet complete; and already traces of another close to the great concrete base in the centre of the Forum have been found, and await further investigation. It will be interesting to see whether these burial grounds belonged to different tribes or no, and to what extent they confirm the traditional history of the origins of the city of Rome.

THOMAS ASHBY, JUN.

COMPETITION FOR THE NEW STOCK EXCHANGE, MANCHESTER.

THE designs submitted by architects in this competition were exhibited in the present Stock Exchange, Manchester, last week. Six local firms had been invited to compete, and on the advice of the assessor, Mr. J. J. Burnet, A.R.S.A., F.R.I.B.A., the Committee have selected the design prepared by Messrs. Bradshaw and Gass of Bolton, the estimated cost of which is 30,000*l*. The conditions of the competition were carefully prepared and it is probably due to Mr. Burnet that they were so favourable to the competing architects. The number of drawings was limited and the small scale of 16 ft. to an inch was specified for all the plans, elevations, and sections; one sheet of details to a scale of 4 ft. to an inch was, however, required. To each firm submitting a design in accordance with the conditions a fee of fifty guineas was promised. The accommodation desired for the purposes of the Stock Exchange was given in detail, the principal room being a "house" or "market" to measure 80 ft. by 50 ft. or thereabouts, but the competitors were also asked to provide a number of offices and other rooms which could be let to tenants and also to state the annual rental which these might be expected to produce. With reference to these offices the competitors were allowed a free hand, but the Committee stated that they had been advised that a number sufficient to produce a rental of 1,800*l*. could be provided in the building in addition to the accommodation required for the Stock Exchange. The site is a rectangle in the centre of the city, almost equidistant from Market-street and Cross-street, and measures about 120 ft. by 100 ft. It is bounded on or towards the north by Norfolk-street, on the west by Pall Mall, on the east by Sussex-street, and on the south by Kent-street. All these streets are narrow, the two last being little more than alleys. Norfolk-street is the widest of the four, but Pall Mall has probably the largest amount of vehicular traffic. These facts do not appear to have been considered in all their bearings by some of the competitors. It is obvious that the best position for the private offices (that is to say, those intended to be let) is on the Norfolk-street front, and that the frontages to Sussex-street and Kent-street are the least suitable for this purpose. Stock-exchanges, we are told, are sometimes not unlike bear-gardens, but perhaps this is a libel; be this as it may, the "house" ought not to adjoin either of the two principal streets, and the Committee-room ought certainly to be placed so that the noise of the traffic will not prove a nuisance. The difficulties of the problem were increased by the fact that there are ancient lights on the opposite sides of the streets, and the competitors were informed that the heights of the external walls of the new building must not exceed those of the buildings now on the site.

In the accepted design by Messrs. Bradshaw and Gass the "house" measuring 78 ft. by 49 ft. is on the ground floor and occupies nearly the whole of the rear half of the site towards Kent-street; five rooms for telephones and telegrams are placed at the Pall Mall end of the "house," and the members' smoke-room, reading-room, and cloak-room at the other end. The principal entrance is at the highest part of Norfolk-street near Sussex-street, a small lobby for the porter and also three small inquiry-boxes being placed on the left of the vestibule. Between this and the north-east corner of the "house" are the principal hall and staircase (28 ft. by 18 ft.), and the members' lavatories are to the right of this with windows in a small central area. Another entrance for members is shown on the Pall Mall front as required by the conditions. Two entrances are provided for the private offices, one in Pall Mall and the other in Norfolk-street, and five private offices are shown on the ground floor on the Norfolk-street-front, the staircase for these being lighted from the central area. The arrangement of this floor is excellent, and in the planning of the Stock Exchange portion the internal architectural effect has been carefully considered. The position of the principal entrance near the highest part of the site has the advantage of allowing the basement-rooms to be better lighted than in some of the other designs. In the basement the accommodation includes five private offices and two strong-rooms towards Norfolk-street, and a private show-room towards Pall Mall, and also the Stock Exchange clearing-room, clerks' lavatories and smoke-room, messengers' room, stores, and heating and ventilating rooms. On the first floor, the secretary's office is placed over the principal vestibule, etc., the general office (28 ft. by 19 ft.) over part of the hall and over the lavatories, and the Board-room (32 ft. by 22 ft.) over the smoke-room and reading-room on the Sussex-street side of the building. The strong-room adjoining the Board-room is not altogether satisfactory, as two of the adjacent walls are carried by girders over the room below. Nine private offices are provided on the Norfolk-street and Pall Mall fronts, and are approached by two staircases; the lavatories, etc., are lighted from the central area. The greater part of the "house" is carried up through this story. Fifteen private offices are shown on the second floor, together with two staircases, lavatories, store-rooms, etc.; on the third floor there are eleven private offices, etc., and a telegraph-operators' room (30 ft. by 29 ft.) with kitchen and lavatory, etc.; on the fourth floor in the highest part of the roof are the battery-room, and another room which can be let or divided to form a caretaker's house. It will be seen that forty-five private offices and a show-room are provided in this design, and nearly all are on the two principal fronts of the building. The office corridors on the first and second floors are not well lighted, but the plans as a whole are decidedly good. The elevations are also meritorious. The principal front (towards Norfolk-street) has a central portion in five bays, rusticated to the top of the ground story; the office entrance is in the middle bay, and the wide opening in each bay on the ground floor is spanned by a segmental arch. Pilasters run through the two upper stories to the main cornice, with bay windows between them on the first floor, and three-light windows on the second floor, the lights having columns between and at the sides. The third floor rooms are lighted by dormers. The principal entrance (to the left of the central portion) is lacking in dignity, and is surmounted by two pairs of coupled columns supporting an entablature and curved pediment, in the tympanum of which a window is placed. This portion of the building is terminated at a lower level than the central portion on account of the ancient lights in Sussex-street. A similar feature is adopted to the right of the central portion, but with a window on the ground floor instead of a door. The detail drawing differs considerably from the small-scale drawings, and is in many respects an improvement, but the entrances generally are somewhat feebly designed. The internal details shown on the ½-inch scale have considerable merit; the "house" has marble columns and a central dome with toplight and pendentives, and the internal effect will probably be satisfactory, although the numerous arches of different curvature and the method of supporting the dome do not strike us as altogether happy.

Messrs. Willoughby and Langham have submitted two complete designs (A and B) and also alternative elevations of Design B. In Design A the whole of the ground floor, with the exception of the staircase to the private offices, is devoted to the Stock Exchange. The principal entrance is in the same position as in the accepted design, and affords access through a large vestibule to the "house," which measures 80 ft. by 50 ft. and has one end towards Sussex-street, the longer sides being (as in the accepted design) parallel to Norfolk-street. The telephone-room is placed between the rear side of the "house" and Kent-street, and is unnecessarily large (80 ft. by 14 ft. 6 in.). The messengers' room, secretary's office, general office, and typist's room, and the second entrance to the Exchange extend along the whole of the Pall Mall front on this floor, and the Norfolk-street front is entirely occupied by the entrances to the Exchange and to the private offices, and by the waiting-room, cloak-room, and lavatories, and one side of the typist's room. On the first floor, the smoke-room, lounge and reading-room are placed over the telephone-room and approached by stairs from the "house"; the Committee-room is over the secretary's and general offices on the noisiest side of the building (the Pall Mall front), and four private offices are provided on the Norfolk-street side. Seventeen private offices are shown on the third floor, approached by one staircase only, and the messengers' kitchen is also on this floor; the corridors depend for their light to a very large extent on borrowed lights. The third floor contains the telegraph-operators' room (43 ft. by 26 ft.), mess-room, and battery-room, and six private offices, and on the fourth floor (in the roof) are rooms for the caretaker or for private offices. In the basement there are four private offices and a large private ware-room (65 ft. by 44 ft.), clearing-room, clerks' smoke-room and cloak-room, etc. Altogether this design provides only thirty-one private offices and a ware-room, and the best portions of the ground and first floors are almost exclusively occupied by the minor rooms of the Exchange.

Design B is in some respects more satisfactory, three private offices on the Norfolk-street front being provided on the ground floor, but the smaller rooms of the Exchange and the upper part of the "house" occupy the whole of the first floor. Fourteen private offices are shown on the second floor, one group of four being badly designed *en suite*, so that three must be traversed in succession to reach the fourth. On the third floor there are twelve private offices, and four on the fourth.

The elevations are well designed, the roofs being well managed and the detail good, and the internal effect of the houses would be very pleasing, but the plans are not as compact as in the accepted design, and the private offices are less numerous.

In Messrs. T. Worthington and Son's design, the "house" is planned in the shape of a Greek cross with four short arms, one of which adjoins Sussex-street. The telephone-room is placed between the "house" and Kent-street, the secretarial department along the Pall Mall front, and the library and committee-room adjoining Norfolk-street. Between the secretarial department and the house is a wide corridor or hall approached at one end from Norfolk-street and at one side from Pall Mall. This is an excellent plan, but does not provide any private offices on the principal floor. On the first floor there are ten private offices with two staircases, etc.; and also a balcony and smoke-room for members. On the second floor there are eighteen private offices grouped around the dome of the "house," but there is only one staircase for these; twelve private offices are provided on the third floor, and there are the telegraph-operators' rooms and a private studio on the fourth floor. The stairs are not very well arranged, but a lift is provided up to the third floor. The elevations are spoilt by a curious and (as far as we can see) unnecessary gap on the second and third floors of the Norfolk-street front, and two windows shown on the plan in the Pall Mall front do not appear in the elevation.

Messrs. Waddington, Son, and Dunkerley place the "house" in the same position as in Design A submitted by Messrs. Willoughby and Langham, with the telephone-room, two smoke-rooms, and two groups of conveniences alongside Kent-street, a large vestibule, members' entrance, and cloak-room adjoining Pall Mall, and the reading-room, two private offices, and staircase, and the principal entrance for members towards Norfolk-street. This is an excellent arrangement but the upper floors are less satisfactory. The secretarial department and committee-room occupy the best positions on the Norfolk-street and Pall Mall fronts on the first floor, these rooms and eleven private offices being arranged in a quadrangle around the upper part of the central portion of the "house," and the only direct light to the corridor around the quadrangle is at the two staircases.

D.

Monumental Headstone, Eastbourne Cemetery. Mr. H. H. Statham, Architect.

On the second floor there are twenty-two private offices, and a room of insufficient size for the telegraph operators; here, again, part of the corridor is inadequately lighted. Twenty-four private offices are shown on the third floor and ten on the fourth. This design provides a greater number of private offices than any other design. The principal elevations are freely treated, and some of the detail is rather crude; the principal feature is an arcade on the second floor with rusticated columns supporting semicircular arches, and with a square-headed window in each bay. The elevations to Kent-street and Sussex-street have been left to take care of themselves and do not exhibit any attempt at grouping or ornament.

Messrs. J. Beaumont and Son have placed the "house" along the Pall Mall front, and show a shop at the angle of Norfolk-street and Sussex-street, and four private offices behind this in Sussex-street and Kent-street. Seven private offices are provided on the first floor, eleven on the second, and nine on the third. The elevation to Pall Mall is effectively grouped, but the planning is defective, particularly in the location of the various rooms.

The sixth competitor was Mr. T. Sington.

NEW VICARAGE, DARESBURY, WARRINGTON.—The foundation stone of a new vicarage at Daresbury was laid recently. Messrs. W. and Segar Owen are the architects for the work, the builder being Mr. W. Wood.

MONUMENTAL HEADSTONE, EASTBOURNE CEMETERY.

THIS is a head-stone for the grave of a lady of Cornish family, and the form and treatment were therefore based on a type found among ancient Cornish crosses—the open or pierced cross at the head of a stele or slab with pyramidal outline. In this case the line of the sides has an entasis. Some of the Cornish crosses of this type have a simple decoration in the shape of a groove or channel up the centre. As two texts were to be carved on the stone, this ancient form suggested the idea of treating the texts as a vertical ornament up the centre of the cross on each side; the spaces between the letters being sunk, leaving the lettering flush with the face of the stone. On one side the inscription, reading upward from the bottom to the top, runs—"When I awake up after Thy likeness, I shall be satisfied with it"; on the other side—"Her children rise up and call her blessed."

The memorial inscription, on the other side, is in gun-metal letters let into the stone on the blank space below where the cross commences; the side shown here being really the back, as it was not desired that the inscription should be included in the illustration. The other side is, however, the same, except that the letters "A" and "Ω" are worked into the band of transverse ornament.

The design is by Mr. H. H. Statham, and was carried out in Hopton wood stone, by Messrs. Farmer and Brindley, from his detail drawings.

ST. MARY THE VIRGIN, ALDERMANBURY, CHURCH.

BY their resolution, carried with only two dissentients, on the 20th ult., the parishioners, who own the advowson, recorded for the fourth time since 1862 their rejection of the Bishop of London's proposal to pull down this church and unite the benefice to that of St. Lawrence Jewry, with St. Michael Bassishaw. The church was restored forty years ago, and in 1898 was repaired and redecorated from the designs and under the superintendence of Mr. Lewis E. G. Collins, who re-instated three pairs of old oak doors which had been concealed under a deal casing, and in which a large number of leaden bullets were found to be embedded. After the Great Fire the church was rebuilt in 1677 by Sir Christopher Wren, at a cost of 5,237*l.* 3*s* 6d., in Aldermanbury, where the aldermen formerly had their Court Hall cited by Stow—a circumstance that may have given a name to the street; that derivation, however, is not beyond dispute. Between 1331 and the Dissolution the church appertained to the Elsing Hospital, also of the same dedication, by London Wall. The former edifice, partly rebuilt by Sir William Eastfield in the beginning of the XVth century had a cloister around the graveyard. Wren's church, constructed of stone, is 72 ft. long, 45 ft. wide, and 38 ft. high, as we read in the "Parentalia." Composite columns, having six intercolumniations, separate the aisles from the nave, which has a ceiling of the barrel-vault type, containing two semi-circular windows, with arch ribs and modelled plasterwork; the main cornice extends down each side of the nave at the springing of the vaulting immediately over the columns. The east end has a high rounded window and a middle cornice with an angle pediment. The tower, having raised coigns (as has the body of the church) and large belfry openings, carries a bold cornice and a partly open balustrade with pinnacles at the angles, from within which rises a square lantern. In the lower stage of the lantern are the clock and dials. The upper stage is pierced with round-headed and railed openings, and is surmounted by a concaved roof rising to a point, on which stands the vane. About eighty years ago the windows of the whole church were filled with heavy Lombardesque tracery, which has an ill-effect. In the course of some repairs was found, near the communion-table, the coffin, bearing his name, of Lord Chancellor Jeffreys, which had been taken thither from St. Peter's-in-the-Tower three years after his death and laid near the remains of his only son, Lord Wem. We may mention the burial in the church of two parishioners, Henry Condell and John Heminge, Shakespeare's fellow players, whom the poet did not forget when making his will, and to whom we owe the first collection of his plays, published by them in the folio of 1623. A monument to their memory erected in the churchyard in July, 1897, by Mr. C. C. Walker, of Lilleshall Old Hall, Shropshire, is of polished red Aberdeen granite, and carries a bust of Shakespeare modelled in bronze by Mr. C. J. Allen from that in Stratford-on-Avon church and the Droeshout portrait. The monument in the church, with busts of Richard Chandler (1691) and his brother John (1686), bears the crest of a pelican on her nest—a device carved in stone also on the front of a house in Aldermanbury, which Archer in his "Vestiges of London" says was occupied by them. Wren's church of St. Michael Bassishaw, was dismantled in October, 1899; the benefice is united to that of the neighbouring church of St. Lawrence Jewry.

SESSIONS HALL, PRESTON.—The new sessions hall at Preston is now nearing completion. The new building is erected in Longridge stone, so far as the external masonry is concerned, and the main entrance is in Harris-street. Above the doorway rises a tower to the height of 165 ft. The building consists of two courthouses, 49 ft. by 39 ft., with accessory chambers and an assembly hall. The stonework has been executed by Mr. David Tullis and Sons, the woodwork has been carried out by Mr. T. Cottam, and the ornamental metal work is by Mr. Omar R. Albrow, of Wandsworth-common, S.W., who also supplied the electric light fittings. Artificial light in the courts will be supplied by eight electroliers, each carrying seven lights. The cost is estimated at 90,000*l.*, and the building has been erected from the designs of Mr. Littler, in the English Renaissance style.

THE ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

A MIDLAND Counties District Meeting of the members of the Association of Municipal and County Engineers was held at Buxton on Friday and Saturday, May 20 and 21. Mr. W. Weaver, C.E., of Kensington, occupied the chair, and there were present Messrs. J. Lemon, Southampton; J. T. Eayers, Birmingham; T. H. Yabbicom, Bristol; W. N. Blair, St. Pancras; J. P. Norrington, London; J. Price, Birmingham; C. Jones, Ealing; W. H. Dorman, Armagh; H. Richardson, Handsworth; C. Lowe, Hampstead; T. Cole, Westminster, secretary; G. W. Lacey, Oswestry; W. H. Grieves, Buxton; A. W. Greatorex, West Bromwich, and others.

Captain Brown, chairman of the Urban District Council, offered the delegates a hearty welcome to Buxton. There were many things in the neighbourhood which would be of great interest to them as engineers.

The President thanked the Chairman for the cordial reception given to the Association.

Mr. A. E. Davis, Shrewsbury, proposed the re-election of Mr. Richardson, of Handsworth, as honorary secretary for the Midland district.

Mr. Grieves, Buxton, seconded, and it was unanimously carried.

Mr. Richardson briefly acknowledged his re-election.

Municipal Works of Buxton.

Mr. W. H. Grieves, Surveyor to the Urban District Council, read a paper on the Municipal Works of Buxton. He said for a small town Buxton, with its tract of elevated hills and moorland, its beautiful gardens, its stone-built public and private buildings dotted here and there on the sloping hills, was certainly one of the most picturesque, as well as one of the most fashionable resorts in the United Kingdom. It was in 1859 that out of portions of the three townships of Buxton, Fairfield and Hartington Upper Quarter, the local board district was originally formed under the Local Government Act of 1858. The district had an area of 1,275 acres, with a rateable value of over 90,000*l*., having during the last ten years increased by over 35,000*l*. The population was estimated at 11,500, having almost doubled itself since 1881. The estimated season population was from 15,000 to 20,000. The death-rate, according to the latest report of Dr. Turner, the medical officer of health, was 11·090 from all causes, including the visiting population, but with a corrected death rate of 9·727 as fairly chargeable against the normal population. The birth-rate last year was 21·5 per 1,000. The general district rate was 3*s*. in the *l*., including 1d. for free library. The water rate was 1*s*. in the *l*., having a year ago been increased 2d. in the *l*., and the poor-rate was 2*s*. in the *l*. There were about 1,900 houses in the district.

Since the town became a local governing body, and more so since it succeeded to the more dignified title of Urban District Council, the members of which had always been animated with the desire to make the town more popular and attractive, Buxton had rapidly increased in population and rateable value, so much so that people were agreed that it ought to possess a charter of incorporation of its own. This might have been the case but for the fact that the neighbouring urban district of Fairfield, which was for all practical purposes part of Buxton, being dependent on Buxton for its gas supply, for the treatment of part of its sewage, and partly for its water supply, did not yet see-eye to eye with the Buxton Council, it being generally admitted that when application for such a charter was made it should be made with the idea of the two councils becoming one and making the application together.

The Council possessed its own waterworks, its own gasworks, and its own electricity undertaking; the policy of the Council being, that if there was any benefit to be derived from these and other undertakings the ratepayers at large should have the benefit. At the present time the Council were promoting a Bill in Parliament to purchase from the Duke of Devonshire the famous thermal baths and waters, the purchase price being 25,000*l*. and 1,000*l*. per annum perpetual chief rent. If the Bill was obtained, this would add yet another profitable undertaking to the Council's possessions. The average number of bathers for the last twenty years exceeded 62,000 per annum. The pump-room was erected and presented to the town in 1894 by the Duke of Devonshire. The uniform temperature of the natural mineral water, which was the same as that supplied to the baths, was 82 deg. Fahrenheit. The yield of the springs was about 120,000 gallons per day. It was estimated that over one million glasses of these warm waters were drunk every year. Another public building is the town hall, which was built in 1877 at a cost of 10,000*l*.

The gardens, which are considered to be the most beautiful in the country, belong to the Buxton Gardens Company. A few months ago a gentleman residing in Buxton handed over to the trustees the sum of 10,000*l*. for providing twelve homes for aged people. The Duke of Devonshire has given the necessary land for the homes, which are to be called the "Milnthorpe Homes," after the generous donor.

There were 20 miles of roads repairable by the inhabitants, and just over 3 miles of main roads, towards the repair and maintenance of which the County Council contribute. The carriageways for the most part were macadamised with the local limestone. Other carriageways were repaired with tarred stone by the Council's men out of the local limestone, but these were not satisfactory where there was very heavy traffic. The success of a tar-macadam road depended on a number of points which require careful watching. First, the stone must be perfectly clean and dry; second, the boiling of the admixture to the proper consistency so that it should be neither too brittle nor too soft; then it was better for it to lie in the shed a few weeks before being laid down. It required experienced men to lay it down. The method adopted by the author in making a tar-macadam road was when the foundation had been prepared to put down a 3 in. layer of 1½ in. mesh-stone, then roll carefully with the steam-roller; then spread a 2-in. layer of ⅝ in. mesh of gravel, and roll as before; and finally cover interstices with ¼ in. fine gravel, and roll again. It was difficult, in this country, at any rate, to have just the weather best suited for laying asphalt. It was no use laying it in wet weather, in cold weather the stuff could not be spread satisfactorily unless it was heated, and in very hot sun it is just the reverse, so that a good deal depended on the weather. A very important question for the making-up or repairing of a tar-stone road, and one upon which the life of the road, to a very great extent depended, was that of the diversion of traffic during such making-up of repairs. The author was confident that unless traffic was completely diverted and kept off a week or two, a successful road could not be made. Nothing was more harmful to such a road than in wet weather traffic carrying dirt and mud from a macadamised road on to a newly-made asphalt road, for thus the dirt and mud worked into the asphalt takes out the very nature of it, and the road, sooner or later, would perish. The average cost of making-up an asphalt road was from 1*s*. 9d. to 2*s*. per square yard, whilst to repair a similar road cost about 1*s*. per square yard. Originally the footpaths were all gravelled, except in the centre of the town, where they were flagged. Now all footpaths were made of tar-stone, and application had been made to sanction a loan to complete the conversion of the footpaths to asphalt. The cost of the footpaths varied from 1*s*. 6d. to 2*s*. per square yard, according to the distance the material had to be carted. If an asphalt footpath has not worn very much, a system of veneering with hot tar and dust which was adopted by the author five or six years ago answers very well. It costs very little, but is a great saving to the footpath.

In reference to flagged footpaths, in April, 1898, the author had laid on the footpath at the top of the Terrace-road, forty-six square yards of concrete flags, made from the limestone, gravel, and cement, as an experiment. Although six years had passed, the flags seem to be none the worse. Since then these flags had been adopted on some of the more important footpaths of the town. The Duke of Devonshire had them laid in front of the hot baths, and the Gardens Company in front of the gardens. These flags possess many advantages over the ordinary York flag. They get a much more even surface, a footpath with a much more pleasing appearance, not at all slippery, which quickly dries after rain, and, above all, was very much cheaper. The method of mixing and making was all by hand. It was made of three, four, or five parts of limestone, gravel, and dust, according to the purpose for which it was to be used, and one of Earl's cement. The concrete was thus moulded in frames specially made and clipped with iron bands. These stood in the shed another day drying, when the bands were removed, and the frames taken away, and the third day the article was ready for removal, and was at once stacked out in the weather. The longer the material was weathered, the better it would stand when fixed in position. Owing to the soft nature of the limestone of which the roads were constructed, they required a good deal of attention at all seasons of the year, for in summer they were very dusty, and in wet weather dirty, so that the scraper and horse-brush are pretty much in evidence. It would, therefore, not surprise the members to know that the Council had adopted a suggestion to try the new disinfectant dust layer "Westrumite." Two tons of the liquid had already been purchased, and the members would have an opportunity of seeing some of the roads which had been treated with "Westrumite." The author hoped for his own comfort, as well as for the general benefit of the community, that it would be a great success.

As the Duke of Devonshire was the ground landlord, it was seldom necessary to make private roads up under the Public Health Act, 1875. Generally speaking, private roads were made under an arrangement with the Duke's agent, and in all cases the Council carried out the work, charging the cost to the Duke. Three of such roads were now under construction. Owing to a dispute which arose on the question of water rights between the council and the Duke of Devonshire, and which lasted for a period of about four years, no land whatever was sold by him during that period, and therefore new roads had not been so much needed. New buildings had not gone up, as they otherwise would have done, in consequence. The result of the dispute was that in 1902 the Council obtained an Act of Parliament giving authority to spend the sum of 170,000*l*. in new waterworks. In this Act the Council had some very important sanitary clauses inserted. Perhaps the most important section was that where the Council might order houses, etc., to be drained by a combined operation without necessarily becoming a sewer. The author was of the opinion that the section referred to would remove, as far as Buxton is concerned, any difficulty which might crop up in the future as to the question of liability by owners in respect to the maintenance and repair of drains to houses built after the passing of the Buxton Urban District Council Act, 1902. It would be remembered that section 19 of the Public Health Act (Amendment Act, 1890) provided that where two or more houses belonging to "different owners" were connected with a public sewer by a single private drain, the local authority might in the case of defective drainage require the owner or occupier to remedy the same, or, in default, do the work themselves, and recover the expenses incurred, etc. The assumption was that if the same drain under exactly similar conditions drained two or more houses belonging to the "same" owner, then the local authority could not require the owner or occupier to remedy the same, but would be obliged to do the work themselves. The position was absurd. The sewerage system of the town was designed by the late Sir Robert Rawlinson in 1860, and had recently been extended at the rate of 1,000 yards per annum. The sewers, of which there were over 36 miles, vary from 36 in. near the outfall to 9 in. in the upper parts of the district. Originally all surface water was passed into the sewers. The reason was obvious, as in 1871 the population was 3,717, and then there were no water-closets or baths. Now there were 3,500 water-closets and over 800 baths. The sewers were laid in open joints, and had very little work to do, and consequently in various parts of the town connections were made from the river to the sewers, in order that during the time of floods these river "storm overflows" would come into action, and the sewers would then get the necessary flushing. Of course, owing to the increase of population, water-closets, baths, etc., these connections consequent upon the increased flow of sewage had given a great deal of trouble, and most of them—where discovered—had been stopped up. In 1900 alone 250,000 gallons per day of surface and spring water were diverted from the sewers into the river; and, as circumstances permitted, this work was carried on, and the separate system was gradually being adopted. The dry weather flow at present was 1,000,000 gallons per day. From a detritus tank the sewage passed into three existing cage-pits, and in these were two additional ones provided in the new scheme, where the solids, such as rags, orange-peel, etc., were arrested

and emptied daily into a pit, from which they were carted away to the farms. After passing the cages the sewage, which was treated by chemical precipitation, was mixed with the precipitant, which was composed of—(*a*) Natural iron water, which flowed to the works by gravitation from a disused colliery-heading three miles away. This water contained six to seven grains per gallon of iron and an appreciable quantity of sulphate of alumina. In Dr. Thresh's opinion this iron water was more effective than any artificial precipitant he knows. (*b*) Milk of lime. The lime was delivered on the works in lump, and was obtained from the Lime Firms Company, not far from the works. The proportion was about 60 grains of lime to the gallon of iron water, and the whole was mixed with five or six times its volume of sewage. This was then agitated by two small water-wheels driven by the sewage itself, and then passed into the settling or precipitating tanks. These tanks were three in number, and were 260 ft. long by 75 ft. wide. At the outer end they were 5 ft. deep, and at the inlet 7 ft.; and were sub-divided by cross walls, which alternately allowed the sewage to pass under and over the same, thus giving the precipitant time to deposit the solids in suspension to the bottom of the tanks. They had a total capacity of 770,000 gallons, and were made to work in duplicate, whilst the third alternately was being cleaned out. The sludge gravitated to a well at the inner end, and was lifted by a centrifugal pump into a sludge tank at the back of the press room. This tank had a capacity of 12½ cubic yards. The sludge is pressed into cake by two of Johnson's air compressors. The cake possessed good fertilising qualities for growing grass, etc. No charge was made for the sludge cake, and farmers took it away; and the Council use the remainder on their farm of 40 acres, which farm was used for producing the hay required for the horses, and also for turning out the horses in the summer-time.

The sewage, after having been treated in the way described, then flows out of the tanks over a sill, and in this way had produced a most satisfactory effluent—as far as precipitation effluents go—for upwards of sixteen years. But even this effluent did not satisfy the Council, as in a dry summer, owing to the river rising just above the town, sometimes nothing but the sewage effluent is passing down the river; and although the effluent might be good enough to turn into any stream, yet it was not satisfactory to leave a stream composed of sewage effluent only. Therefore, after much experimenting with various kinds of filters, the Council received the sanction of the Local Government Board to construct new filter beds, and the contract was let to Mr. J. S. Dawson, Assoc.M.Inst.C.E., of Blackpool, chief assistant to the surveyor, who acted as resident engineer.

Three clarifiers, or intermittent streaming filters, had been constructed on land immediately below the precipitating tanks, and which was already in the possession of the Council. These beds had an aggregate depth of about 5 ft., with an area of about 1,000 square yards. Through these the tank effluent would pass before sending it down to the filters. They were so arranged that they could be worked either upward or downward at will. The beds, underdrained, were composed of larger media than the filter-beds below. The sewage would be distributed over the clarifiers by means of wooden troughs, and pass out either over the sill at the bottom or through the penstock. The sewage from the precipitating tanks and clarifiers was delivered at the new works into a feed-channel, at a level of 870·42 above Ordnance datum, 4 ft. 6 in. wide and 18 in. deep. This channel was controlled by penstocks, so that any part of the filters could be working or resting at will. The concrete floors were 9 in. thick, worked up to a smooth surface, with a fall from each division wall to the centre, and from the inlet side to the outlet. From the centre of each bed a 12-in. pipe communicated with the effluent channel.

The question of distribution of the sewage over the filters was not lost sight of; and the Council, after visiting several places where automatic distributors were at work, decided in favour of Adam's patent Cresset revolving distributors, which are driven automatically by the head of liquid in the feed-channel.

So far the filtering media had been obtained from the Council destructor works, and also some hundreds of tons were purchased from outside the district; the clinker was first put in the bed and gradually reduced in size till the top layer, of a depth of 6 in. to 9 in., was composed of the ¼-in. ashes. The total depth of the bed was 4 ft. 6 in. The increased depth would be completed as the clinker is produced at the destructor. From the purchase by the town of the waterworks, in 1874, the position of the water supply remained somewhat stationary until the year 1886, when the Lightwood reservoir was enlarged. Then the total holding capacity of the various reservoirs, viz., Lightwood, Cold Springs, Burbage and Watford, was 8½ million gallons. In 1892 the Council realised the necessity of still further increasing the storage capacity, and constructed a new reservoir at Burbage, which increased the storage capacity by 15 million gallons. The collecting area, which rises above the reservoirs from 1,230 to 1,800 feet above sea level, was a tract of moorland and wooded country over four miles long and half a mile wide, and had an area of about 1,900 acres. This area was absolutely free from population and cultivation. The reservoirs were all within two miles of the town.

The Council obtained an Act of Parliament in 1902, sanctioning the construction of a new reservoir, with a storage capacity of 80 million gallons, and aqueducts for conveying the water to the reservoir. The estimated cost, including lands and casements, etc., was 170,000*l*. The contract for the reservoir, which was being constructed from the designs of Messrs. G. N. Hill and Sons, was, in December last, let to Messrs. Fisher and Le Fann, of Belfast.

The consumption of water in Buxton was greatly in excess of towns of similar size, owing to the large number of water-closets, baths, carriages, char-a-bancs, etc., and the supply to the railway companies. The consumption per head reached nearly 40 gallons, which was often exceeded in the summer time. The by-laws in force were adopted eighteen years ago, and based on the model by-laws of the Local Government Board. Those relating to the disconnexion and ventilation of the drains were only put in force some seven years ago; up to then the custom was to allow the sewers, in addition to the open manhole system, to ventilate themselves through the ventilating shafts erected on private drains. At first the builders did not take kindly to the change, but so far from any difficulty arising, they had in many cases provided themselves with the necessary stoppers for testing, so that it is far less trouble for the surveyor to test the drains than formerly. In the case of new buildings, the whole of the drainage was hydraulically tested before being covered up.

A two-cell destructor was erected in 1886, at a cost of 1,836*l*. (exclusive of site), of the Manlove, Alliott and Frye type. The cost of collecting the refuse was 2s. 3d. per ton, and the cost of burning the same, including repairs to the cells, etc., was 11d. per ton.

Mr. J. Price, Birmingham, proposed a vote of thanks to Mr. Grieves for his paper. After using cement for twenty-five years he had come to the conclusion that it was one of the most fickle subjects they had to deal with; unless the greatest precautions were taken with the cement which the manufacturer delivered on to their premises, the results were not such as they would like. He had some cement which passed every possible test and yet absolutely failed. It passed the test for fineness, for tensile strain, and for slowly setting, yet that cement in many cases cracked to such an extent that they had to discontinue the use of it.

Mr. MacBrair, Lincoln, seconded the vote of thanks. It seemed to him they had a very extensive process of sewage disposal. In these days they thought if they had an effluent which went through one or two contact beds they had one good enough to go anywhere.

Mr. C. Jones, Ealing, pointed out that the position of Buxton as a health-resort was different from most towns, and they had not to consider the expense, but the good name and character of the town.

Mr. Lacey, Osweatry, congratulated the town on possessing the waterworks, gasworks, and electrical undertaking.

Mr. Greatorex, West Bromwich, thought a better stone should be used on the more important thoroughfares. The advantages would more than outbalance the disadvantage of cost. To have the streets constantly torn up was a matter of annoyance to shopkeepers and visitors.

Mr. Price, Lytham, said he envied Buxton the power it had to deal with combined drainage. The previous week his Council had a Bill in Parliament, and one of the clauses was to get similar power, but their agent told them it was no use attempting to override the public law by a private Act.

Mr. Cox, Manchester, Mr. Taylor, Newcastle, and others, having contributed to the discussion, the vote of thanks was unanimously passed.

The members were entertained to luncheon; and the afternoon was devoted to visits to the electricity works, and the bacteria filter beds.

On Saturday further visits were made to the Dorlow Lime and Stone Company's works at Hindlow, Mr. A. W. Spencer's new lime works, and the works and Hoffman kiln of the Buxton Lime Firms Company.

On Monday an excursion was arranged to Chatsworth House and Haddon Hall.

THE ARCHITECTURAL ASSOCIATION SUMMER VISITS:

I.—MOOR PARK, RICKMANSWORTH.

THE current series of summer visits commenced on Saturday, the 14th inst., when, in fine weather, a body of some thirty-five members assembled at Moor Park, Rickmansworth, with the object of studying this well-known classic house. Under the guidance of Mr. H. B. Couchman, agent to the estate, the gardens, tea-house and lodge, standing on the north side of the Watford-road skirting the park, were first visited. These are early XVIIIth century brick buildings, very interesting in themselves, and are the only remaining parts belonging to a larger dwelling, now destroyed, known as Hampton House. The lodge sets back from the road about 20 ft., and the massive garden walls are built to form a semi-circular forecourt which is laid out in two grass plots. The effect is attractive, and one which might be more often attempted in present-day work. Behind this building is the tea room—a kind of garden house, octagonal in form with plaster-vaulted ceiling enriched in the Adam manner. Entering the park, which is here bordered by a famous avenue of limes, the site of a historic moated house was pointed out, in which, with much other tradition, Cardinal Wolsey is said to have lived and entertained his King on a scale of some magnificence.

The present house was built originally of brick, about 1685, by the Duke of Monmouth, after purchasing the estate, and was encased in Portland stone in 1720 by a succeeding owner, who added the portico on the north front; for this later work an Italian architect, Giacomo Leoni, was employed. The transformation cannot be said to be successful from all points of view, although a sense of dignity is present. A large Corinthian order, embracing three floors, is applied, with columns and pilasters standing upon pedestals, and the heavy entablature is lavishly carved in orthodox detail, giving the impression of an overpowering effect on the other features, which indicate an idea of the true scale of the house. One result of the use of the order is the distortion of the ground floor and top floor windows. The portico is of such great height that no directly useful purpose is served by its introduction. This dressing of the fronts was the outcome of the ostentatious fashion of the day.

The plan of the house is typical of the period; high, rectangular rooms placed on the four fronts, with the principal ground floor apartments arranged intercommunicating, whilst two top-lighted staircases occupy positions unsuited to any other practical purpose. A large hall is entered from the portico, giving access—through five marble doorways—to some of the principal rooms and to the staircases. This is a very lofty apartment with a gallery carried all round on corbels at the top floor level. A plain marble floor laid in large squares is quite pleasing, while the walls have large panels containing painted allegorical subjects by Amiconi. The ceiling is also painted, and is a representation of a dome in perspective, but the illusion is hardly successful.

The employment of foreign skill at this period of great building activity in England is instructive from many points of view; there was talent enough of a native kind, and a fashionable painter was Sir James Thornhill, but his efforts in the large painted subjects in the saloon at Moor Park are disappointing. This is in a great measure due to the absence

of frames or other similar methods of setting, which works of this kind require.

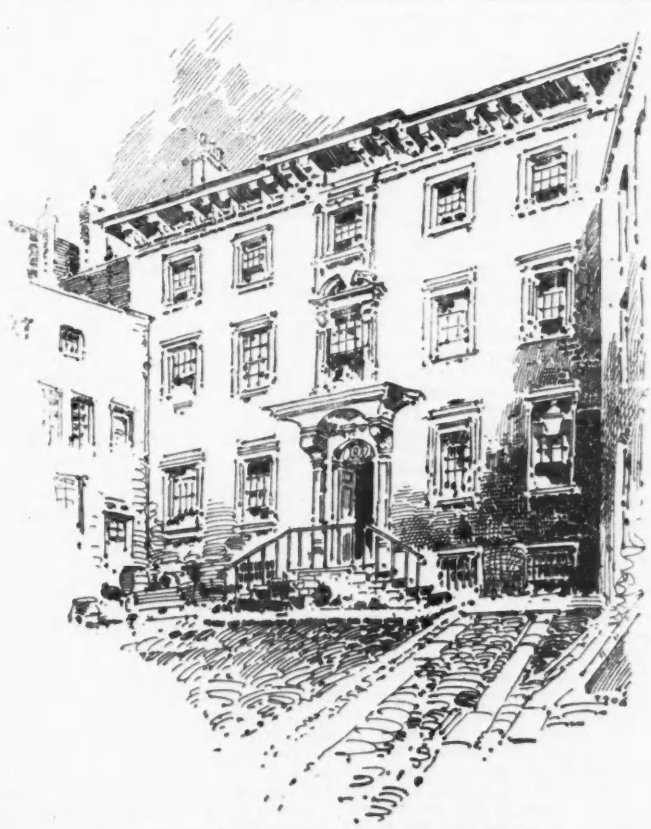
The ceilings of the principal rooms are coved and elaborately modelled in plaster; that in the dining-room—an unusually narrow chamber—is covered with painted decoration which is said to be the work of Cipriani and Angelica Kaufmann. Many excellent marble mantelpieces are to be seen; an especially good one is also in the dining-room, the interesting feature of which is a frieze designed as a procession of graceful female figures.

On the north front is a so-called Italian garden and terrace, falling very slightly from the house, and enclosed by low stone walls. Flower beds having box borders are laid out in a formal manner with large standard yews at intervals, and at the time of the visit the whole garden was a glorious mass of wall flower, in about four varieties, in full bloom, the fragrance of which will ever be remembered. This broad use of a single early flower is to be commended in preference to the lavish variety so usually resorted to in the arrangement of early flowers in formal gardens.

A classic pleasure garden situated on high ground, with a circular fish pond, stone temple, and stepped approach, was also inspected; and lastly, the kitchen gardens, with various interesting forms of standard fruit trees, amongst other sights, concluded an enjoyable and, withal, profitable afternoon's excursion.

"WREN'S HOUSE."

THIS XVIIth century house, which during some years past has served for the Billingsgate, Tower, Dowgate, Bridge, and Candlewick Ward Schools, is one of the four or five in London which, it is said, were inhabited by Sir Christopher Wren when occupied, as Surveyor-General, in rebuilding churches and other edifices after the Great Fire. That tradition apart, the house presents many features of unusual interest as an example of a residence in the City in olden times. It has a large paved forecourt, which is entered through Fenn's gateway at No. 32, Botolph-lane, Eastcheap; the rear abuts upon the sinuous foot-thoroughfare of Love-lane. The west front of the house, which is of red brick, has a deep cornice carried upon consoles, and on that side the flat roof is without a parapet. Some of the stucco-work is modern; the brick-work of the dog-kennel beneath the front steps is now covered with cement. The interior has been re-arranged for school purposes; the two spacious landings on the principal staircase are absorbed into the class-rooms, and their ornamental ceilings are cut by the partitions. There is a second staircase in the north part of the house; one or two rooms on that side have what were, apparently, powdering-closets. The parlour on the entrance floor has a moulded ceiling decorated with foliage; the panels are painted with figures and other subjects discernible only on a sunny afternoon; on one of the panels is painted:—"R. Robinson, 1696." In the plaster ceiling of the main staircase is moulded "1670." The large room on the first floor contains a fine chimney-piece, of white and inlaid coloured marble, most delicately carved, and after the Adam style; two fluted pilasters, having foliated and flattened capitals, support a frieze ornamented with rosettes in circular inlays; in the middle is a panel with a recumbent figure in high relief, at the ends are wreathed vases in low relief. A room above was the laundry; the old ironing fireplace is boarded up. The doorways of the principal rooms have massive jambs and curved pediments; the carved stair-rails and posts, and the joinery generally, are of a good and substantial character. We are informed that the house will be vacated at no distant date, upon the removal of the schools into new buildings in connexion with the Sir John Cass Foundation in Jewry-street, Aldgate. We may add that Mrs. Riddell introduces it into her novel, "Mitre-court," the story of which is laid in the city.



View of Wren's House, Botolph lane, Eastcheap.

ARCHITECTURAL SOCIETIES.

MANCHESTER SOCIETY OF ARCHITECTS.—On the evening of April 26 the Manchester Society of Architects began their summer programme by a visit to the new transit sheds for the Ship Canal. The sheds are constructed entirely of ferro-concrete, on the Hennebique system, the roofs being covered with Limmer asphalte. Mr. Williams, the resident engineer, showed the visitors through sheds in various stages of erection, and the visit was an instructive one. The next visit, on May 17, dealt with a very different branch of an architect's work, the members visiting the works of the Pilkington Tile Company at Clifton Junction. Such works, seen under the guidance of such an enthusiast as Mr. Burton, the manager, show one something of the wonderful fascination of the potter's craft, and explanations of the various processes, from the raw clay to the very beautiful finished tile or pottery, were listened to with the keenest interest.—The fortieth annual report of the Society shows that it now has a total of 207 members, viz., 103 Fellows, fifty-one Associates, and fifty-three students. The total number when the last report was issued was 193, showing an increase of fourteen in the year. In accordance with some new regulations on the subject of alliance with the other societies, recently passed by the Manchester Society, the Blackpool and Fylde Architectural Association have applied for and been admitted into alliance. In the course of the Report it is stated that the thanks of the Society are due to Mr. A. E. Corbett for the work he has undertaken for the publication of a map of buildings of architectural interest in the neighbourhood. The first proof of this map will shortly be published and distributed to architects and others who may be interested, and who may be willing to give their services in editing and revising any section with which they may be familiar. By this means it is hoped that a most valuable map may be obtained which will be a guide to the antiquary and a help to the architectural student in search of subjects for study.

ARCHÆOLOGICAL SOCIETIES.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—A meeting was held at the rooms in Sackville-street, on the 18th inst., at 8 p.m. Mr. C. H. Compton, Vice-President, in the chair. A paper was read by Mr. R. H. Forster, on "Durham and Other North Country Sanctuaries." He said distinction must be drawn between taking sanctuary in an ordinary church and in certain churches specially privileged. In the former case the culprit had to abjure the realm, in the latter he obtained permanent protection; there were about thirty churches so privileged in England; those of the north being Durham, Tynemouth, Hexham, York, Ripon, Beverley and Wetheral. The origin of their privileges was obscure, and in early times their rights were, probably, more limited, but would be increased by the reputation of the local saint, which resulted in a grant of *jura regalia*, and royal officials could not follow offenders into liberties which possessed such semi-independence. In 1342 Beverley, Ripon, Tynemouth, Hexham and Wetheral had permanent grithmen or sanctuary men, who were offered free pardons if they would enlist under Edward de Baliol for service in Scotland; Durham was probably in the same condition, but the Bishop had his own forces to provide for. Anciently many sanctuaries extended from the church for a mile in every direction, but later the protected area was that subject to the *jura regalia*, which in the case of Durham extended over the whole county. The privileges of Durham are said to have been granted by Guthred the Danish King, in 883, and to have been confirmed by Alfred; they gave sanctuary for thirty-seven days, but as the power of the bishops increased, this period was extended; there is no direct evidence of the process, which must be inferred from what we find existing at the beginning of the XVIth. century. The formalities of taking sanctuary may be gathered from the "Rites of Durham," and the Cathedral registers, and the number of admissions during the fifty years for which entries are extant, averaged under six a year. The "Rites of Durham" says that the grithman was conveyed out of the diocese, but this is not supported by the registers, which are better evidence, the "Rites" being of doubtful value on this point. Expressions in the registers, especially "libertas infra Tynam et Tysam," tend to show that the grithman could live anywhere in the county; we find men coming to Durham from other sanctuaries, and there are two cases of grithmen living in the bishopric years after their admission. Out of 240 recorded cases all but two come from outside the county. Crime committed within a sanctuary could not be protected at that sanctuary, and a criminal of county Durham could not take sanctuary at Durham; the real sanctuary area was the county itself. The reputation of St. Cuthbert and the power of the mediæval bishops preclude the supposition that Durham had lower privileges than are known to have been possessed by other sanctuaries.—A second paper was read by the Chairman, on the question, "Can Votive Offerings be the Subject of Treasure Trove?" supplementary to his previous paper, read on December 16 last, upon the recent decision of Mr. Justice Farwell, that the "finds" at Lough Foyle were treasure trove, and belonged to the Crown as such. The defence in that case was that the articles found were votive

offerings to a river god, and did not, therefore, come within the definition of treasure trove; the contention for the Crown being that even if they were votive offerings, they would come within that definition. The learned judge's decision was founded on other grounds, and this question was, therefore, left undecided. After explaining the nature and object of votive offerings, and referring to the rule that if the owner abandoned the articles in dispute the Crown's right would not attach, the reader referred to instances, ancient and modern, leading to an inference that the devotee disposed of his offering without any intention of resuming possession, which would be such an abandonment not only of the things offered, but also of the owner's right and title thereto, as would defeat this right of the Crown and vest the ownership in the finder; and this would be especially so in the case of things found in tombs intended for the use of the deceased in his future existence, which were not concealed *animo revocandi*, but deposited as the property of the deceased, or an absolute and irrevocable gift to him. The practice of the Treasury in claiming gold and silver discovered under these circumstances still awaits a judicial decision as to its validity. Time did not allow of any discussion on these two interesting papers. At the Council in the afternoon the Hon. Sec., Mr. Patrick, directed the attention of the meeting to the needless and persistent destruction by the Town Council of Berwick-on-Tweed, of the Edwardian walls of that most interesting old town, and the greatest regret was expressed that the Town Council should be so oblivious of the injury and loss they are causing, not only to Berwick, but to the whole Kingdom, by their inability to appreciate the value of the remains of the ancient glory and history of their town. Printed slips, descriptive of the present condition of the walls and towers, forwarded by Dr. King, the Vicar of St. Mary's, Berwick-on-Tweed, were circulated at the evening meeting.

WESTMINSTER CITY COUNCIL.

THE usual fortnightly meeting of this Council was held on Thursday last week, at the City Hall, Charing Cross-road.

Piccadilly Widening.—The Improvements Committee reported that they had appointed five of their members to confer with five members of the Improvements Committee of the London County Council with regard to the widening of Piccadilly, between St. James's-street and Duke-street.

Martlett-court Improvement.—The same Committee reported having again considered the following paragraph of their report of April 11 last, which was referred back to them by the Council:—"We have received a letter from Messrs. Beadel, Wood, and Co., solicitors to the Duke of Bedford, dated March 21, 1904, enclosing a plan of the proposed Martlett-court Improvement, and stating that they have now arranged to secure the freehold interests of 29, Bow-street, and are negotiating for the freehold of No. 1, Martlett-court, as well as the leasehold interests, and that, subject to a proper agreement being entered into, they are willing to advise the Duke of Bedford to agree to a scheme for the removal of Martlett-court so as to adjoin Bow-street police-court, and to throw into Bow-street certain land, provided the City Council carry out the necessary paving works and put into force the powers they possess under the Michael Angelo Taylor's Act, where applicable, or failing that, to petition the Local Government Board for a provisional order for the purpose of altering the position of the court, subject to the Duke of Bedford reimbursing the Council all moneys spent in obtaining and putting in force the above powers, as also the compensation moneys paid."

Having again considered the matter, the Committee once more recommended that the Council should accept the proposal set out in the letter, and this was agreed to.

Wardour-street Improvement.—On the recommendation of the Committee, it was agreed to call the attention of the London County Council to the fact that the pulling down of twenty-six houses in Wardour-street afforded a good opportunity for widening that thoroughfare.

Great Smith-street Improvement.—The Committee recommended, and it was agreed, that the corner of the railings at the Great Smith-street library should be rounded off.

Vincent-street Improvement.—An offer was received from the Napier Memorial Church Club to dedicate to the public a piece of land, about 530 ft. super., at the corner of Vincent-street and Hide-place, by which the street could be inclined at a very narrow part. The offer was conditional on the Council making good the pavement around the site without charge. On the recommendation of the Committee it was agreed to accept the offer and to execute the paving works at an estimated cost of 130*l.*

The Valuation Bill.—The Law and Parliamentary Committee reported having considered this Bill. They were of opinion that, although some minor amendments tending to promote further uniformity of assessment might, with advantage, be made in the existing law as regards London, the present Bill, in its application to the metropolis, was quite unnecessary, and would, if passed into law, add considerably to the cost of administration with practically no compensating advantages. The Committee recommended:—(*a*) That the Council do express the opinion that, with a view to promoting uniformity of assessment in London, a clause should be inserted in the Bill empowering the London County Council to delegate a representative to attend the meetings of the existing Valuation and Assessment Committees, and to object to any assessment, and, if necessary, to appeal to Quarter Sessions, but that in all other respects the Bill should not apply to London.

(*b*) That a petition under the Common Seal of the Council be presented against the Bill.

The recommendations were agreed to.

The Committee reported the receipt of a number of communications from Borough Councils with regard to the Bill.

Sanitary Institute Congress.—On the recommendation of the Public Health Committee Councillor N. G. Thomas was appointed a delegate to the Sanitary Institute Congress, to be held this year at Glasgow.

Lamps, Signs, etc., Authority for Sanctioning.—The Works Committee reported that the Mayor, two members of the Council, the Town Clerk, and the City Engineer attended before the Building Act Committee of the London County Council on the 2nd inst. to discuss the question of the jurisdiction of the London County Council and the City Council with regard to the regulation of lamps, signs, and other structures overhanging the public way. They were informed that the London County Council were in communication with the Local Government Board on the subject, and it was suggested that, as the City Council were in favour of making by-laws, it would facilitate matters if the City Council would also communicate with the Board.

The Committee reported that the Town Clerk had been instructed accordingly.

Sewer Reconstruction.—On the recommendation of the Works Committee it was agreed to reconstruct the sewer in Regent-street, between Nos. 93 and 113, at an estimated cost of 250*l.*; and to substitute a 9-in. and 12-in. pipe sewer for the existing brick sewer in Green-street, at an estimated cost of 350*l.*

Lighting of Aldwych.—The Committee reported having considered tenders for the lighting of Aldwych. The specification prepared by the City Engineer was as follows:—For the provision and fixing of about sixteen columns, bases, lanterns, burners, and other fittings; for the light to be 20 ft. above ground; for each lamp to give a minimum 700 candle-power, and to burn 3,940 hours per annum; for the maintenance for five years, and annual painting during that period, of each lamp; for the cost of the initial installation to be payable in five equal yearly instalments, without interest.

The specification also provided by other schemes for an installation with 15 ft. standards instead of 20 ft., and for an installation with telescopic standards, movable between 15 ft. and 20 ft. The Committee considered that, for a street of the width of Aldwych, the public lamp standards should be 20 ft. in height. They were also of opinion that a telescopic standard would be a source of danger, especially in connexion with a gas lamp, and for those reasons did not recommend the acceptance of quotations on either of those schemes. Of the tenders submitted that of the Gas Light and Coke Company was the cheapest; 20*l.* per lamp for installation, to be paid in five annual instalments, and 15*l.* 10*s.* 5*d.* per lamp per annum, cost of maintenance and lighting, including gas or electricity. The company pointed out that they were unable to agree to the clause as to the payment and observance of rates of wages and hours of labour recognised by the association of employers and employees, although they believed their rates of pay were no lower than union rates. The Committee recommended that the tender of the Gas Light and Coke Company be accepted, subject to the conditions attaching to the tender, except the condition referring to rates of pay and hours of labour. After some discussion the matter was referred back to the Committee for further consideration.

COURT OF COMMON COUNCIL.

THE usual fortnightly Court of Common Council was held at the Guildhall on Thursday last week, the Lord Mayor presiding.

The Improvements and Finance Committee submitted a report relative to the arrangement, agreed to in July, 1899, for widening the western end of Fleet-lane, Farringdon-street, which involved the absorption of New-court. The Committee reported that, as the magistrates did not see their way to make the necessary order for the closing of the court, the improvement had been abandoned.

A report was received from the Streets Committee relative to the suggested appointment of a Select Committee of the House of Commons to consider the whole question of the means of escape from fire in factories and workshops; and recommending that the City Members of Parliament be asked to support the proposal.

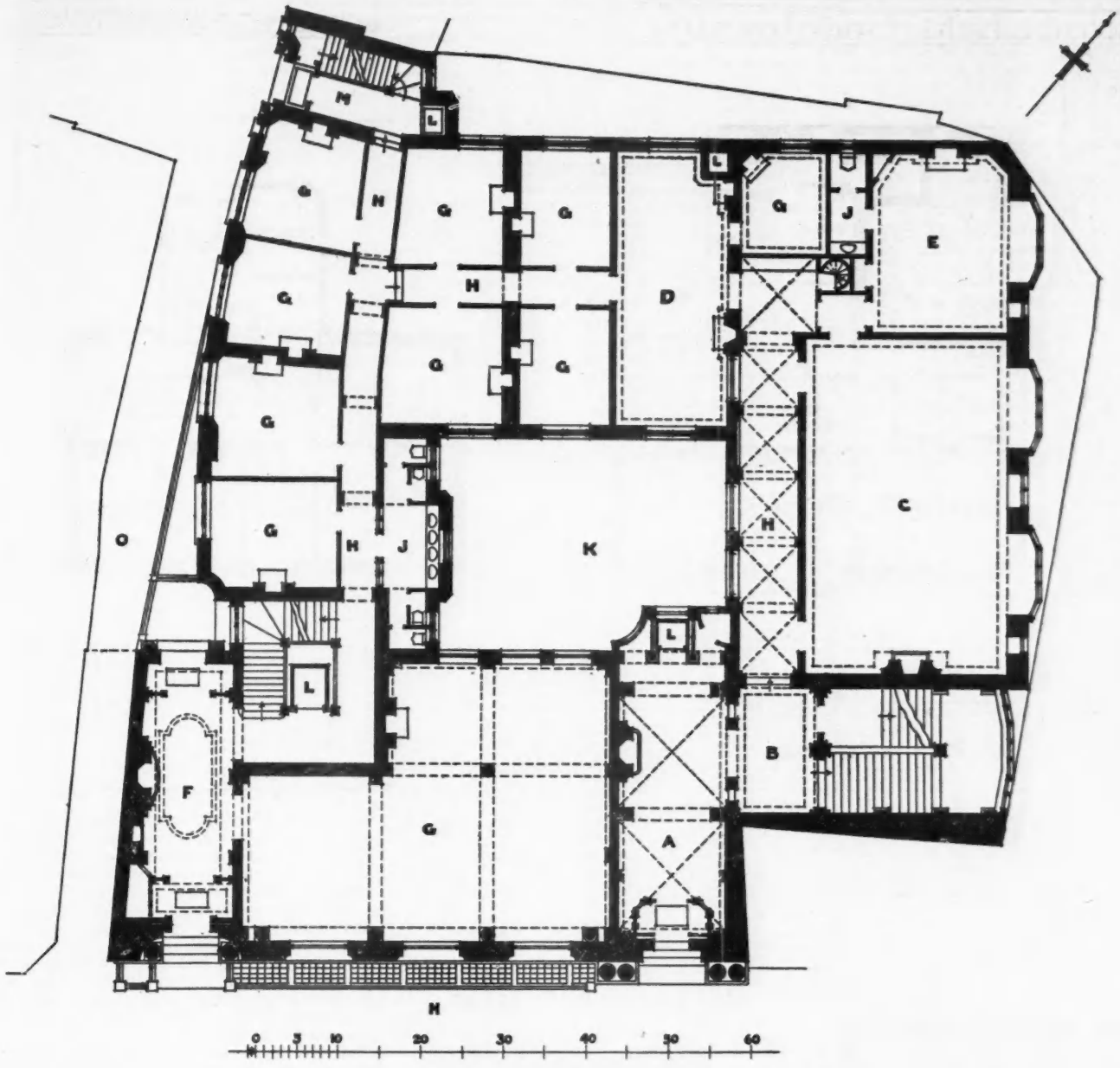
Resolutions were received from various bodies urging the deletion of London from the Valuation Bill now before Parliament, and, in one case, asking the Corporation to appoint two delegates to attend a conference of Metropolitan Borough Councils, etc., at Spring-gardens, on May 27 next, at three o'clock. Mr. Pridmore and Alderman Burnett were appointed.

The Lord Mayor laid before the Court a letter from Mr. Andrew Murray, the City Surveyor, asking the Court to accept his resignation under the terms of the Corporation pension scheme. The letter was referred to a joint committee of the City Lands, the Bridge House Estates, the Improvements and Finance, and the Officers' and Clerks' Committees.

On the recommendation of the Coal and Corn and Finance Committee, it was agreed to undertake a systematic re-wiring of the Guildhall. The work will commence with the Art Gallery, on which it is proposed to expend a sum not exceeding 200*l.*

NEW OFFICES OF THE HEARTS OF OAK BENEFIT SOCIETY.—The foundation-stone of the new offices for this society, which are to be erected on a site in Euston-road, was laid on the 23rd inst. The estimated cost of the new premises is 44,000*l.*, and the architects are Messrs. Essex, Nicol, and Goodman, of Birmingham. The building was illustrated in our issue for February 22, 1902.

BURY UNION HOSPITAL.—The memorial stones of this new hospital, which is being erected at Jericho, were laid on the 12th inst., as we stated last week. The new hospital scheme, for which Mr. A. Hopkinson, of Bury, is the architect, is estimated to cost 30,000*l.*, but at present the administrative block, two large pavilions, and a maternity ward, only are being built. The contract has been let to Mr. James Byrom, of Bury, for 20,699*l.* The complete scheme will provide accommodation for 201 beds, and the portion now being erected is for 126 infirm people, and seventeen nurses. As completed, the hospital will have an administrative block with storerooms in basement; nurses' dining and sitting rooms, scullery, stores, surgery and dispensary, doctor's lavatory, men and women's waiting rooms, and head nurse's office on the ground floor; probationers' sitting room, superintendent nurse's sitting room and bedroom, six nurses' bedrooms, stores, bathroom, and water-closet on the first floor; and ten bedrooms, store, bathroom, and water-closet on the second floor. There will be two large pavilions, one for men on the west side of the administrative block, and the other for women on the east side, each two stories high. Each floor will contain a large ward 91 ft. 3 in. by 24 ft. wide, and 12 ft. high, with accommodation for twenty-eight beds; day room, 16 ft. by 24 ft. at end of large ward; ward kitchen, ward for two beds, 16 ft. by 14 ft. 6 in., stores, bedroom, and water-closets. There will be a maternity ward, one story high, 28 ft. by 24 ft., for six beds, with labour ward, kitchen, stores, bathroom, and water-closet. There will be two smaller pavilions, one on the west side of large pavilions for men, and one on the east side for women. These will be two stories high, and each floor will contain a large ward, 55 ft. 3 in. by 24 ft., and 12 ft. high, with accommodation for sixteen beds: day room, 15 ft. by 24 ft., and 12 ft. high, at end of large ward; ward kitchen; a ward, 16 ft. by 14 ft. 6 in., for two beds, to men's pavilion; and a ward, 16 ft. by 19 ft. 6 in., for three beds, on the ground floor, and for four children on the first floor, to women's pavilion; stores, bathroom, and water-closet. All the floors will be fireproof, and the ward floors are to be finished with maple, polished; the kitchens are to be tiled, and the passages will be of terrazzo. The walls of the wards, etc., are to be in Keene's cement, finished with ripolin enamel paint, and the dado to kitchens and passages to be tiled.



Ironmongers' Hall, Fenchurch-street; as proposed to be re-built. Plan.

A.—IRONMONGERS' ENTRANCE HALL.
B.—MAIN STAIRCASE.
C.—COURT ROOM.
D.—GENERAL OFFICE OF COMPANY.
E.—CLERKS' OFFICE.
F.—ENTRANCE TO OFFICES.
G.—OFFICE.
H.—CORRIDOR.
J.—LAVATORY.
K.—OPEN COURT.
L.—LIFT.
M.—SERVICE STAIRCASE.
N.—FENCHURCH STREET.
O.—FISHMONGER ALLEY.

Illustrations.

IRONMONGERS' HALL, FENCHURCH-STREET.

THE rebuilding scheme of the Ironmonger's Hall comprises the necessary accommodation for the Worshipful Company of Ironmongers, together with suites of offices letable to the general public.

The building has been arranged around a quadrangular central area, and is five floors in height, exclusive of the basement and mezzanine in the north-west portion of the building, between the first and second floors.

The two main entrances are on the extreme right and left of the Fenchurch-street front, and lead to the main staircases of the Ironmongers' Company and the public offices respectively.

The first floor comprises the banqueting hall (63 ft. by 33 ft.), drawing-room (33 ft. by 28 ft.), and other offices. The second floor comprises the gallery to the banqueting hall and the parlour (32 ft. by 15 ft.) and lavatory accommodation, with subsidiary open newel oak staircase. The third floor comprises the ladies' dining-room (21 ft. by 16 ft.), and the bed and dressing rooms of the officers and members of the Company. The extensive kitchen accommodation is also on this floor. In the basement are the wine cellars, plate and document rooms, lavatory and cloak rooms, etc.

A large proportion of each of these floors have office accommodation letable to the general public.

The whole of the building is well supplied with electric lifts; that at the end of the right-hand entrance hall, projecting into the central area, being a subsequent addition to the plan.

The façades to Fenchurch-street and Fishmonger-alley are in Portland stone with copper roofs over the bay windows.

Messrs. Hubbard and Moore are the architects. The drawing is exhibited at the Royal Academy.

"COOMBE FIELD," GODALMING.

THIS house was built from the designs of Mr. Gerald C. Horsley about two years ago, on the summit of Frith Hill, Godalming. It was planned with a view to economy of space and cost.

The exterior walls are of the local Bargate stone, and, owing to the exposed situation of the house, were built with an inner wall of brick and the space between was filled with "hygeian rock" composition.

The roof is of local red tiles, and the work was carried out by Mr. N. Purday, and Mr. J. Gorringe, of Farncombe, near Godalming.

NEW PUMPING STATION, CLEVEDON, SOMERSET.

THE Clevedon Water Company have recently very largely increased the scope of their undertaking under the direction of Mr. James Mansergh. The photographs we publish show the buildings of the New Pumping Station, which have been designed by and erected under the supervision of Mr. H. Dare Bryan, of Bristol. The buildings are executed in local green-grey Pennant stone with Bath stone dressings, (the roofs covered with Broseley tiles), and have been carried out by Messrs. Chancellor and Sons, of Bath, Mr. W. H. Lewis acting as clerk of works.

We may say that it was not originally intended to employ an architect, but to leave the buildings to the engineer. It was due to Sir Edmund Elton, however, the ground landlord, whose historic house, Clevedon Court, is quite close, that the exterior treatment was put into the hands of an architect.

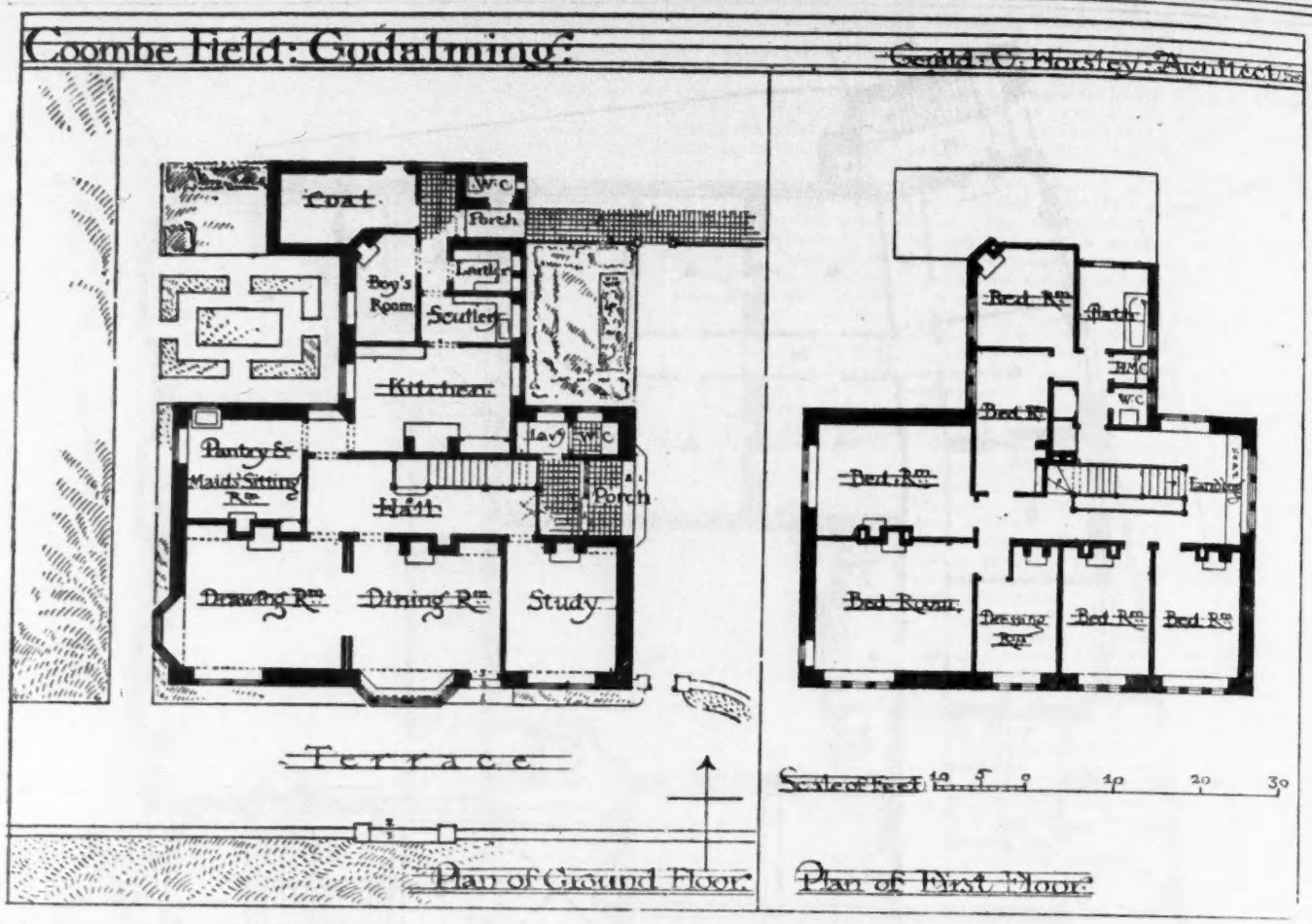
RALSTON U. P. CHURCH, PAISLEY.

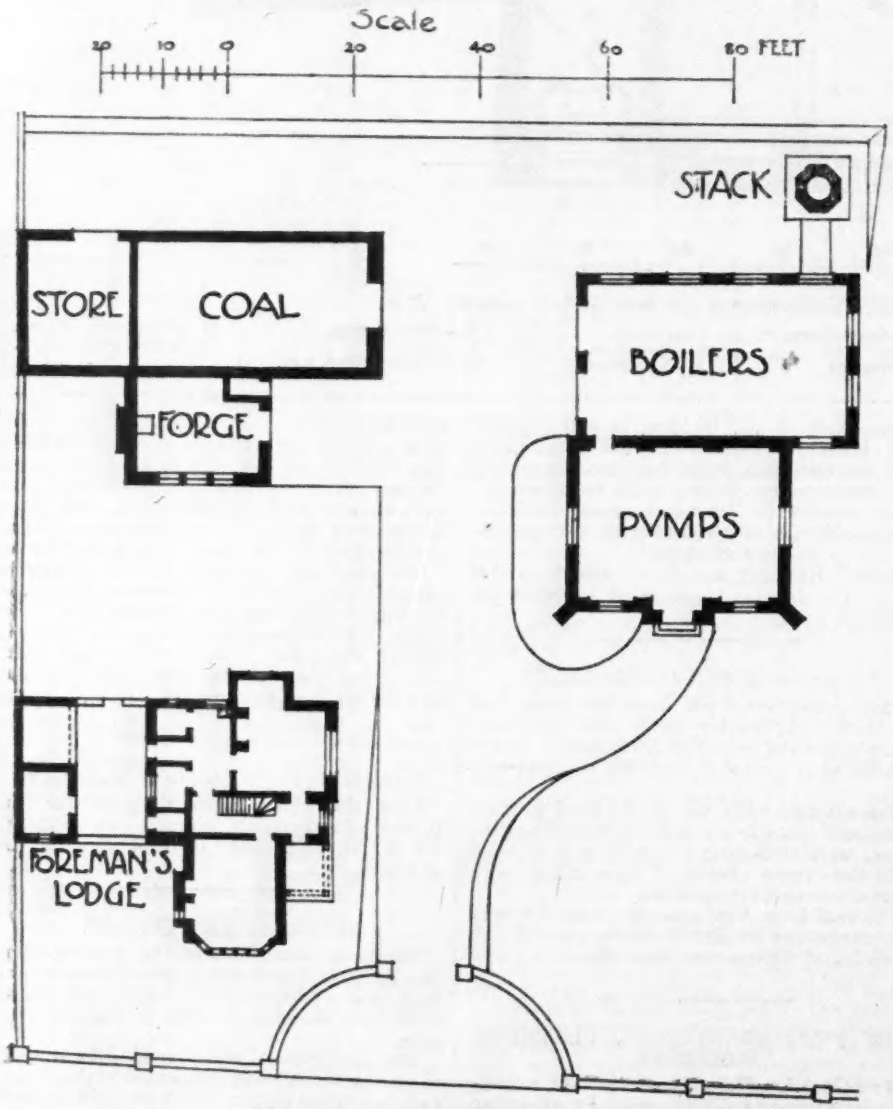
THIS shows a church designed for the United Presbyterian worship at Paisley. Mr. W. D. McLennan, of that city, is the architect.

HOUSE AT KENSINGTON.

THIS is an illustration of the entrance-front of a house in Kensington to which some alterations and additions have been made. The small plan shows what some of the additions were.

The dining-room was turned into a hall, and a new dining-room was added on the north-east, facing the garden, which was laid out in a formal manner. A new wing was added on the north, containing a library, billiard-room, fencing-room, and butler's pantry in the





Waterworks Buildings, Clevedon. Plan.

basement, and two bedrooms, bathroom, etc., on the first floor. A new staircase was fitted; a large bay to the drawing-room was added, and on the south a new conservatory. The kitchen offices were also remodelled.

The walls to the house, when the alterations and additions were in contemplation, were faced externally with cement. These walls were rough cast, and the new walls were similarly treated. The dressings to the new work were of Monk's Park stone, and the roofs were tiled. The flèche and the enclosed covered way to the entrance were omitted.

Messrs. Whitehead and Co. were the contractors, and the work was carried out from the designs and under the superintendence of Mr. R. A. Briggs.

NEW SCREEN, DYMOCK CHURCH.

THIS screen, of English oak, has been recently erected in Dymock Church, Gloucestershire, under the arch between the nave and south transept. On the north side is a memorial inscription with the arms, etc., of the donor, and on the south a series of pateræ in the cornice ornamented with the crowned M, the rose, and pot of lilies—emblems of the Virgin to whom the altar in this transept was dedicated.

The work was executed by Messrs. H. H. Martyn and Co., of Cheltenham, from the designs of the architect, Mr. Roland W. Paul, of London. The drawing is in the Royal Academy.

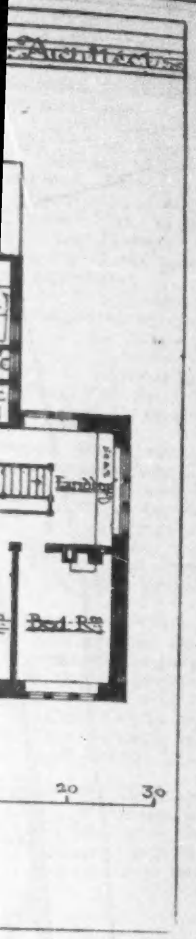
NEW REREDOS AND LECTERN, ABBEY DORE CHURCH.

THE chancel of this interesting Herefordshire church was reopened during last summer after being repaired. The lectern and reredos, are gifts to the church. Both are of oak. The reredos, in triptych form, has a series of painted panels with emblems of the Passion, the Trinity, and the Virgin in the upper part, and a conventional treatment introducing the sacred monogram in the lower, while the doors will have the emblems of the Evangelists.

It was executed by Messrs. Collins and Godfrey, of Tewkesbury, the contractors for the repair of the church, and the panels were painted by Mr. Flashman, of Barnet, whose firm also executed the lectern. The altar cross and vases were supplied by Messrs. A. Stalman and Co. The designs were made by the architect, Mr. Roland W. Paul, of London. The drawing is in the Royal Academy.

"INK-PHOTO," SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

PROPOSED FAÇADE FOR THE NEW IRONMONGERS' HALL, FENCHURCH STREET.—MESSRS. HUBBARD & MOORE, ARCHITECTS



ooms, bathroom, etc., staircase was fitted; ving-room was added, w conservatory. The remodelled.

when the alterations contemplation, were ement. These walls the new walls were dressings to the new Park stone, and the che and the enclosed ce were omitted.

l Co. were the con- was carried out from the superintendence

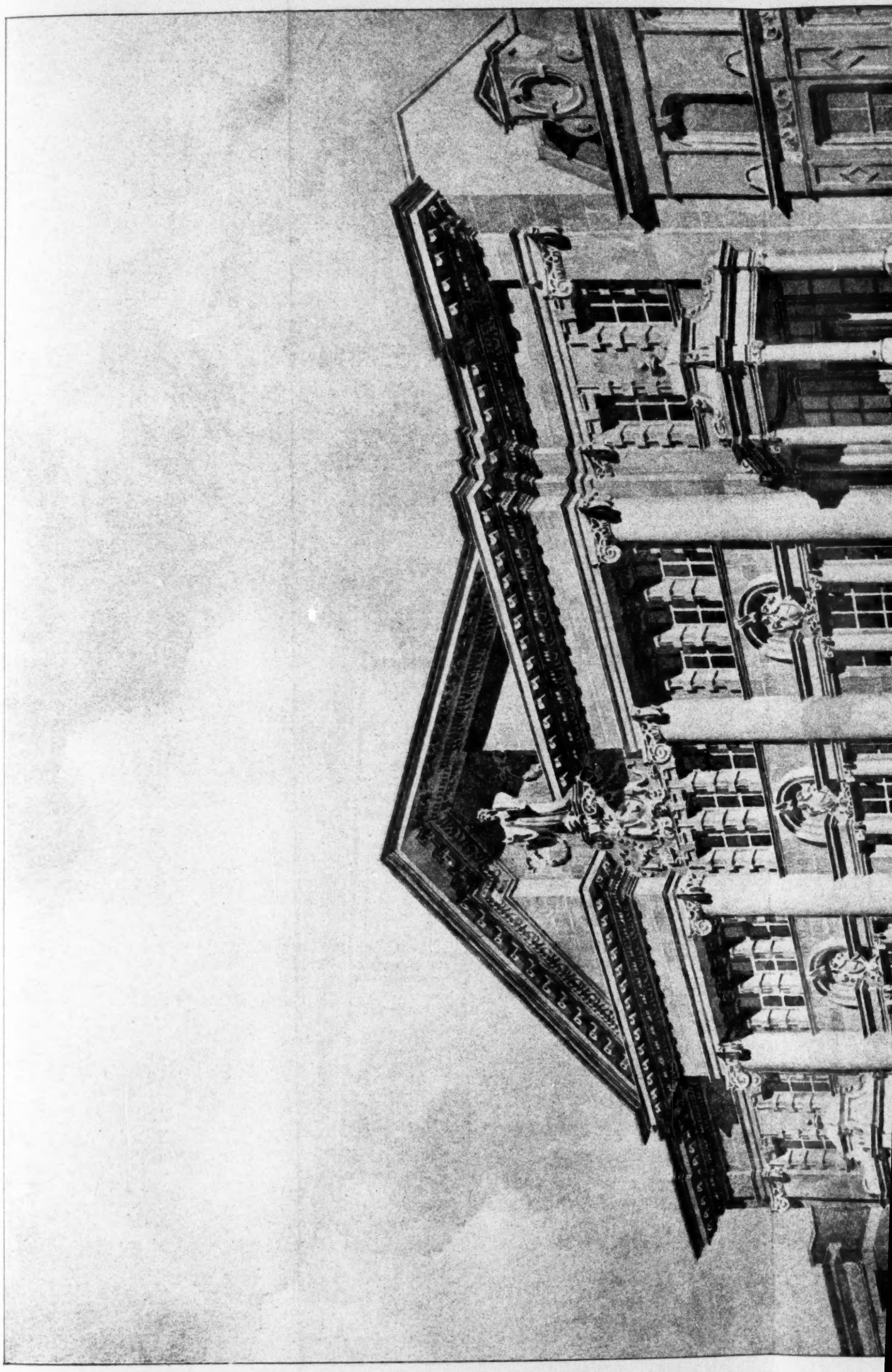
HOCK CHURCH.

oak, has been recently rch, Gloucestershire, the nave and south side is a memorial , etc., of the donor, es of pateræ in the the crowned M, the ablems of the Virgin nsept was dedicated. d by Messrs. H. H. eltenham, from the , Mr. Roland W. drawing is in the

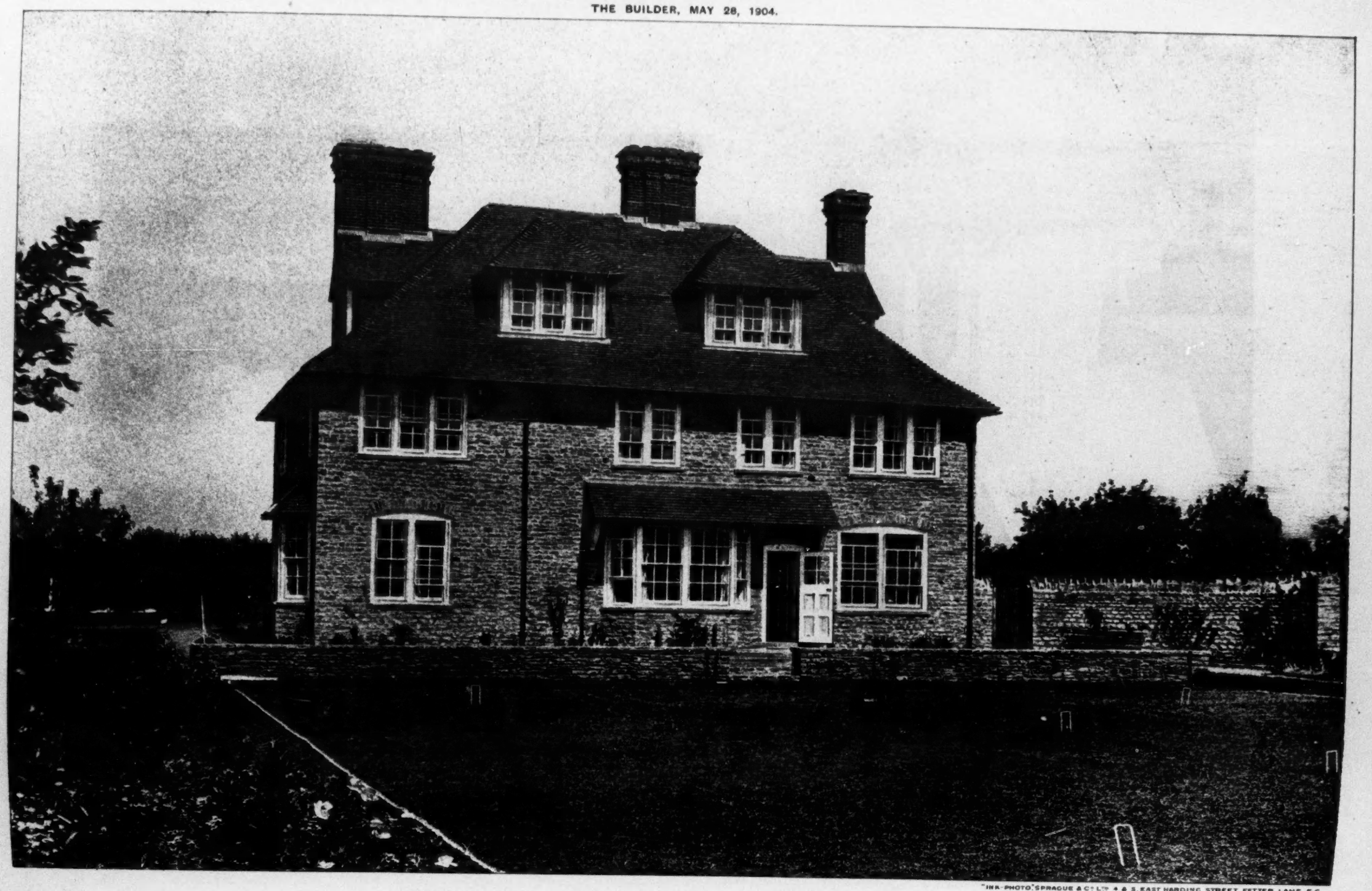
LECTERN, ABBEY RCH.

nteresting Hereford- during last summer lectern and reredos, oth are of oak. The as a series of painted Passion, the Trinity, per part, and a con- oducing the sacred le the doors will have elists.

rs. Collins and God- contractors for the d the panels were , of Barnet, whose lectern. The altar pplied by Messrs. designs were made land W. Paul, of the Royal Academy.



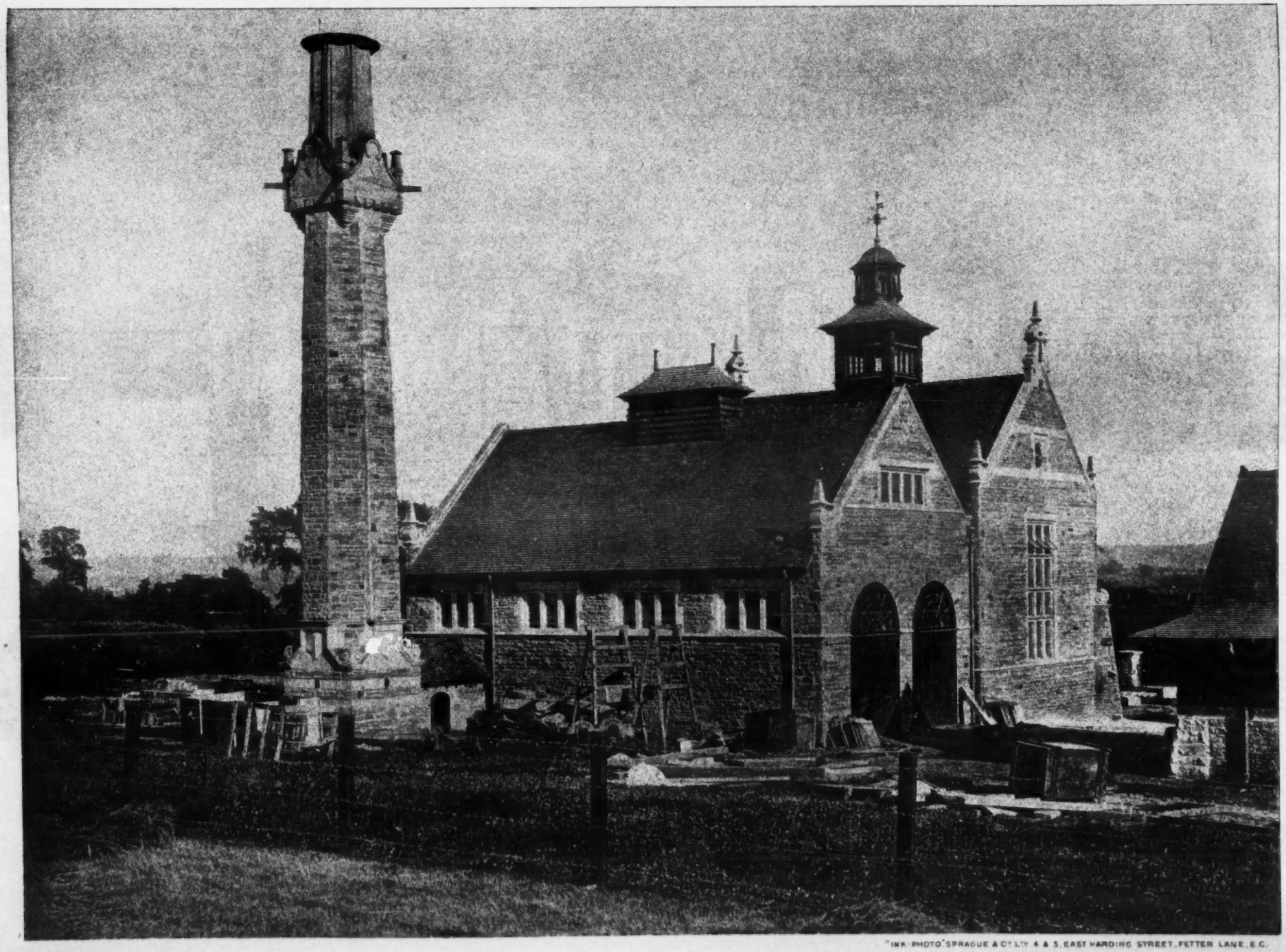
PROPOSED FAÇADE FOR THE NEW IRONMONGERS' HALL, FENCHURCH STREET.—Messrs. Hubbard & Moore, Architects.



"INK-PHOTO" SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

"COOMBE FIELD," GODALMING.—Mr. Gerald C. Horsley, Architect.

"COOMBE FIELD," GODALMING.—Mr. Gerald C. Horsley, Architect



"INK-PHOTO" SPRAGUE & Co. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

WATERWORKS BUILDINGS, CLEVEDON, SOMERSET.—Mr. Jas. Mansergh, M.Inst.C.E., Engineer; Mr. H. Dare Bryan, F.R.I.B.A., Architect.

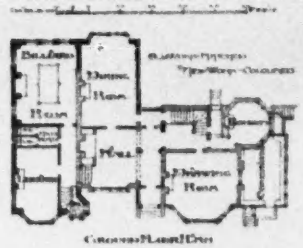
RALSTON U.P. CHURCH - PAISLEY -

W. D. McLENNAN. ARCHT. PAISLEY

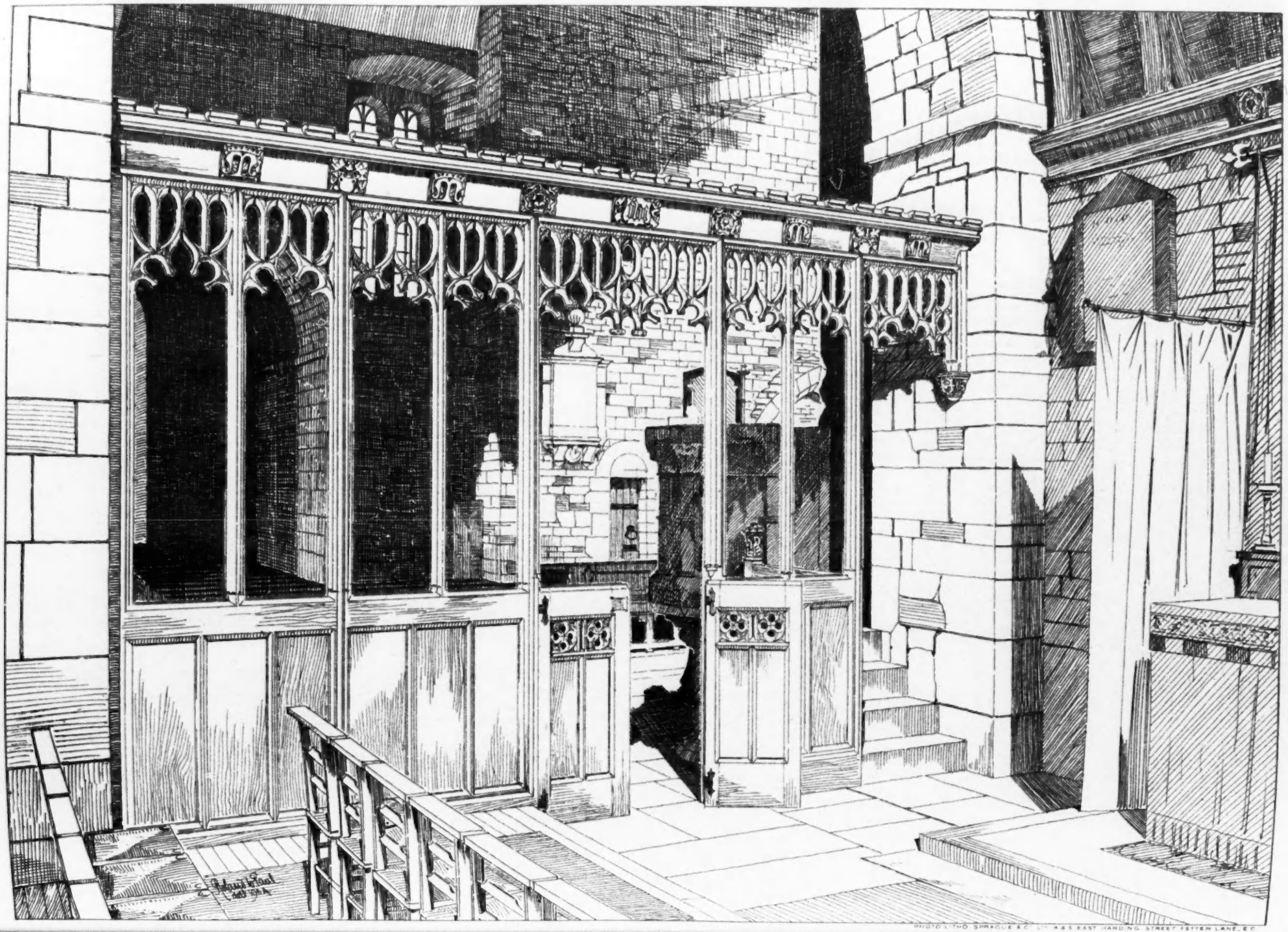
INK-PHOTO SPRAGUE & Co LTD 4 & 5 EAST HARDING STREET FETTER LANE E.C.

Additions to 54 Kensington Park Road

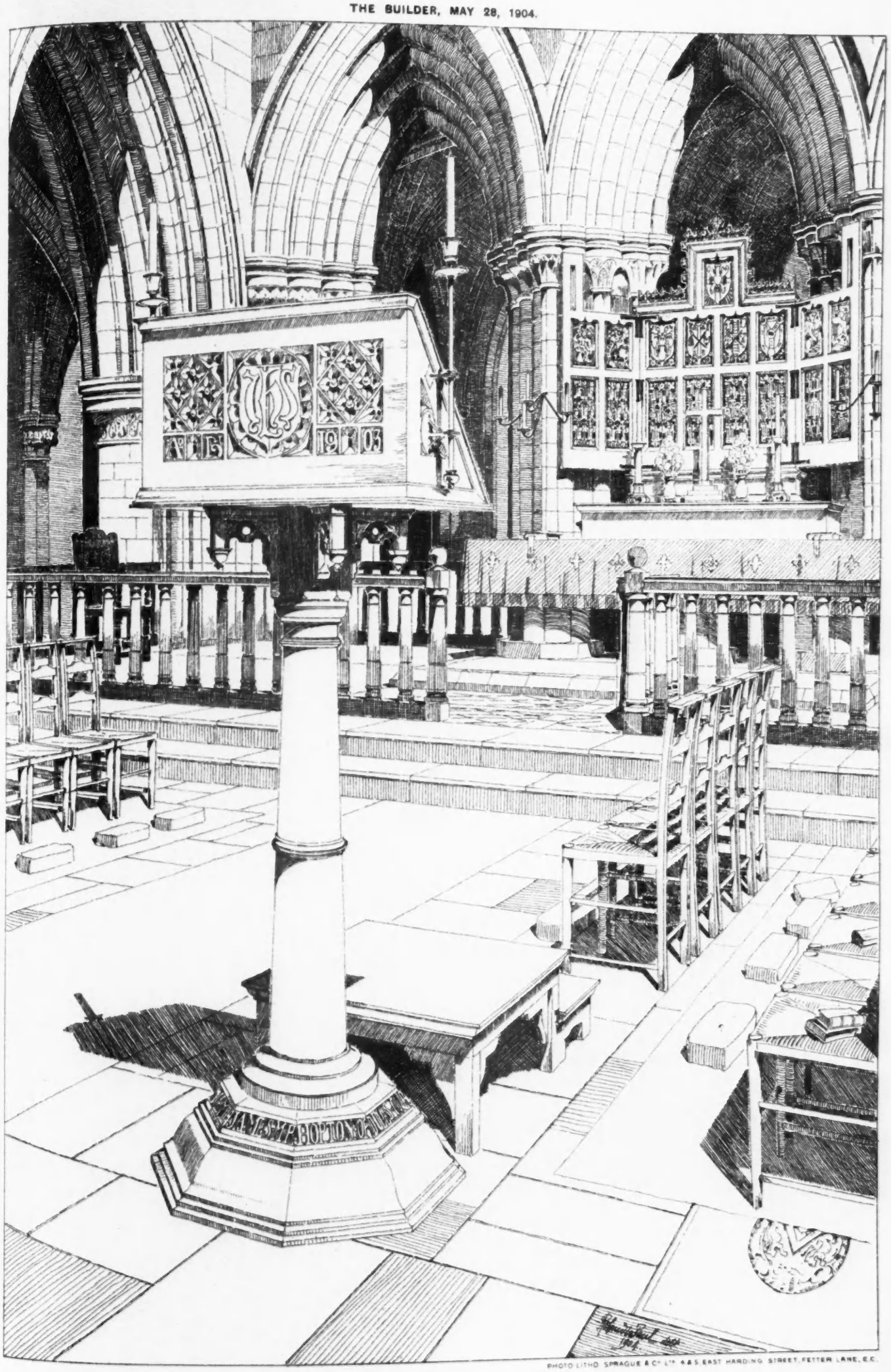
By Briggs Wigglesworth, Architect



INK-PHOTO. SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.



NEW SCREEN, DYMOCK CHURCH, GLOUCESTERSHIRE.—Mr. Roland W. Paul, F.S.A., Architect.



NEW LECTERN AND REREDOS, ABBEY DORE CHURCH, HEREFORD.—Mr. Roland W. Paul, F.S.A., Architect.

NEW SCREEN, DYMOCK CHURCH, GLOUCESTERSHIRE.—Mr. Roland W. Paul, F.S.A., Architect.

COMPETITIONS.

HOLY TRINITY CHURCH, STOCKTON-ON-TEES.—Designs for a new chancel, organ chamber, etc., at this church, were submitted by nine north country architects under motto, and on the opening of the sealed envelopes it was found that the successful architect was Mr. C. S. Errington, A.R.I.B.A., Grainger-street West, Newcastle-on-Tyne, who is to be entrusted with the carrying out of the work.

STOCK EXCHANGE, MANCHESTER.—The Manchester Stock Exchange is about to find a new home on a central site in Norfolk-street, with frontages to Pall Mall and adjoining thoroughfares. Designs were asked for from a limited number of architects in Manchester, and within a radius of 20 miles. A number of firms were selected to compete, and Mr. J. J. Burnet, architect, of Glasgow, as professional assessor, has selected the design submitted by Messrs. Bradshaw and Gass, of Bolton, who have been appointed architects of the new building, which will cost over 30,000*l*.

Books.

English Architecture. By THOMAS DINHAM ATKINSON, Architect. London: Methuen and Co. 1904.

OUR sentiments towards this little book are entirely appreciative. It is good both in matter and form, and the illustrations, which are numerous, are drawn with spirit. A map serves as a frontispiece, in which the country is partitioned up geologically as regards building materials and their influence on local characteristics of style. The idea is original, but the very limited size of the plate—it is only 4 in. by 3 in.—has misled the author into a harshness of definition that is not entirely satisfactory. It is true that there are strong racial distinctions, if one may so call them, in the architecture of any country, but these want to be very carefully dealt with, lest those lesser distinctions which impart individuality to a particular building or to a group be overwhelmed.

There is another small matter. We do not think that in the year of grace 1904 reference need have been made to the intersection of semi-circles or the *vesica piscis* as the possible origin of the pointed constructional arch. Such a suggestion is grotesque, and robs a highly important architectural feature of the dignity which has been earned by centuries of evolution. We are the more surprised, since we notice elsewhere that the speculations upon low-side windows are dealt with in the most summary fashion. So many books containing illustrations are now printed upon calendered paper, and their weight doubled in consequence, that the author may be congratulated upon having avoided this precedent. He has given us a book which it is possible to handle or to carry if desired without inconvenience; and, since it is destined, no doubt, for the general reader seeking instruction rather than students searching for reference, its form should be favourable to it.

The Lighting of Schoolrooms: A Manual for School Boards, Architects, Superintendents, and Teachers. By STUART H. ROWE, Ph.D. New York: Longmans, Green, and Co. 1904.

"CAREFUL observation has shown that a considerable percentage of those who enter the schools in apparently good health soon manifest impaired general vigour, acquire distorted spines, become near-sighted, and develop a group of more or less distressing nervous symptoms." This extract from the preface, written by Dr. S. D. Risley, of Philadelphia, furnishes the key to the able treatment which this all-important subject matter has received in this little publication. Previous writings by the author, Dr. Rowe, entitle him to speak with authority, and he has here recorded the results of experience and research in a practical way, appealing both to the organisers of, and the workers in, present-day educational establishments.

To governing bodies acquiring sites valuable information is given, particularly with regard to obstructions to light and air caused by neighbouring buildings, trees, and hills. To architects, advice and details are tendered pertaining both to the construction of new schools and to the remodelling of old buildings. In calculating window space, the author considers that a glass area, free of frames, equal to one-sixth of the floor area, is the minimum factor in the lighting of any schoolroom. Aspect, position of windows in relation to the work of the scholars, blinds, colours, window design, and the use of artificial daylight reflectors are among the numerous matters discussed and illustrated.

The teacher's duties are emphasised, wherein he is counselled to collaborate with the architect in those matters which directly affect the mental and physical well-being of the child. The questions of arranging desks and of the testing of light and sight are supplemented by appendices, which complete a handy and valuable contribution to the scanty literature on this subject.

Twelve Drawings by W. G. Mein, illustrating a Fragment by D. L. A. Jephson. London: R. J. Everett and Sons. 1903.

THIS portfolio of drawings, which, though dated 1903, has only just reached us, consists of a dozen drawings in black-and-white pen-work, illustrating an outline of a short story of a life, told in suggestion rather than in detail. It is with the drawings alone that we are concerned. They show a fine artistic sense of what can be done in pen-line only, both in the indication of effects of nature and in the composition of imaginary scenes of poetic suggestiveness. The closing one of the series, "The Path to the Rising Sun," is exceedingly fine, and would give the best idea of the artist's talent, but it would hardly be fair to him to make it cheap by reproduction. We have given, however, a reduction of No. 4, "The Tarn," as a specimen of Mr. Mein's style of work. The portfolio of drawings, covered and got up in very good taste, would make a nice present.

The Modern Carpenter, Joiner, and Cabinet-Maker. Vol. VII. London: Gresham Publishing Co.

THE seventh volume of this work treats several very difficult subjects. The section on staircases and hand-railing is obviously written by an experienced man, and is well illustrated. We may notice especially the very beautiful elliptical staircase of Plate LXXII. Parts of the text are, however, too condensed to be of much use; and this is particularly the case in the chapter on geometrical handrailing, which would be almost unintelligible to a reader who did not already know something of the subject. It seems a pity that some of the book-work in the section on geometry, Vol. III., did not bear directly on this subject, which presents greater geometrical difficulties to the wood-worker than any other. As it is, there are no cross-references between the two sections; and in fact one of the most obvious criticisms of this rather pretentious work is that the different subjects treated of might just as well be studied in separate text-books, where it is probable that they would be more clearly and exhaustively treated.

"The Tarn." From the Drawing by Mr. W. G. Mein.

Section X. consists of two parts—one on airtight case-making, the other on wood-turning; why thus grouped together we do not know, especially since they are by different authors. The chapter on airtight cases, though practically useful, of course, only to expert joiners, is clear and good. Some of the joints given—as, for instance, that for the junction of three glazing bars mutually at right angles—are models of ingenious and delicate workmanship. The two chapters on plain and ornamental turning are not so good, and exhibit almost to perfection the art of describing without instructing. The section on cabinet-making by the same author is executed with more care, but with little better success. It is amusing to compare the pious exhortation to good workmanship with which this section opens and such slovenly methods of construction as, for instance, that illustrated in the diagram for the "rule joint," p. 259, where a most awkward distortion of the quadrant is made in order to save the trouble of letting in the back-flap, knuckle inwards, in the usual way. Altogether this section is extremely poor, even from the practical standpoint; and the designs with which it is illustrated are generally in the worst style of the modern furniture trade.

The Art of Masonry in Britain. By WILLIAM DIACK. Offices of *The Stone Trades Journal.* 1904.

THE masons' trade has much to be proud of, and, as we follow the author in his descriptions of the masons' work scattered over England and Scotland, we entirely share his enthusiasm. Perhaps it would have been best to have allowed the masonic reputation to rest upon this solid foundation of achievement. For he throws half the weight upon his conception of the mediæval guild system, and his conception is not sound. The only authority of any moment whom he quotes is Dr. Brentano (whom he calls, by the way, Brenato), and he misquotes him. The author is desirous of giving an added importance to the masons' guild by planting its origin in prehistoric times, "when masons' meetings were held in the dens and caves of the earth." Dr. Brentano does speak of the guild organisation being current in the VIIIth, IXth, and Xth centuries, but it is with reference to frith guilds, and not trade guilds. He names the weavers as one of the first among the trade guilds, dating from Henry I. The trade guilds were not secret societies possessing some occult influence upon the progress of the arts. They were, on the contrary, quite matter of fact, and the precursors, as Mr. Diack is at pains to point out, of the trades unions of to-day.

Homes for the Country. By R. A. BRIGGS, F.R.I.B.A. London: B. T. Batsford. 1904.

THIS is a collection of forty-eight plates showing designs and plans for residences. "The Windmill House," at Aldeburgh, is interesting. A disused mill has been incorporated with additions. We are told that the design looks well in execution. There is also a "sketch design for a house" which is attractive, in which the offices, while grouped in a subsidiary wing, yet occupy a part of the frontage; this appears to be invested with an older country-house feeling than any of the others. Indeed, many of the designs evidently have frontages on to a high road, and are as applicable to a London suburb as they are to the country, while the majority do not seem to have been carried out anywhere. The evidences of final consideration exhibited by an executed design are frequently lacking in first essays, however suggestive.

Great Masters: reproductions in Photogravure. With descriptive text by Sir Martin Conway. London: W. Heinemann. (In progress.)

THIS fine publication, which we have before noticed, and which has now reached Part XV., continues to be as excellent as its first promise. Part XV. contains an exceedingly fine reproduction of Romney's beautiful portrait of Miss Ramus, and includes also Rembrandt's "Night Watch," with a short statement by Sir Martin Conway of its curious history (still very little known to general readers); how it was a commission from a number of respectable citizens, members of the Arquebusiers' Company, who wanted their portraits in a combined group, and complained bitterly that the demands of portraiture were sacrificed to the painter's desire for effects of light and shadow. The previous number contained, among other things, Gainsborough's "Duke and Duchess of Cumberland," in which Gainsborough was evidently thinking of Watteau, and a fine reproduction of Velasquez's beautiful nude study, "Venus with the Mirror." The work is to be complete in twenty-five parts. The publishers provide, for those who wish, a special set of hinged frames, with dust-proof backs, for arranging and displaying the engravings in sets, four at a time.

TRADE CATALOGUES.

THE General Electric Company, of Queen Victoria-street, have sent us a large catalogue of electric bells and accessories, lightning conductors, speaking tubes, and telegraph instruments. The catalogue is well illustrated, and we notice descriptions of many novelties. The ships' side-light indicator and controller not only indicates both visibly and audibly whether the lights are burning or not, but also automatically brings a reserve lamp into circuit the moment that one fails. This device seems to us to meet most of the objections that are urged against the use of electricity for ships' signal lights. The cheap forms of telegraph instruments illustrated, suitable for learners and students, ought to prove useful in technical schools. They are quite as instructive as the ordinary instruments and are only one-quarter of the cost. Full descriptions are given of the appliances used in Killingworth Hedges's "air-to-earth" system of lightning conductors. The "tubular earth" shown has much to recommend it, and its low price will make it popular.

We have received from the Edison and Swan Company of Queen-street, a catalogue of electric bells, indicators, and accessories. The catalogue is well printed and the descriptions of the various kinds of electric bells are clear and explicit. Instructions are given for connecting-up bells and indicators both in small houses and in large buildings, and the diagrams of the connexions can easily be followed by any intelligent workman. Everyone interested in electric bells should get this catalogue. They also send us a leaflet describing the "linolite" system of lighting. We have already commented favourably on this system. We suppose that the initial difficulties the inventor had with the excessive heating of the reflector and the short life and low efficiency of the lamps have been overcome. In another leaflet it is announced that the price of the high voltage "economic" fuse boards has been reduced. A break of three and a half inches is given, and as the fuse wire is in sight this ought to prove effective if the channel is always cleaned before a new fuse is inserted.

From Messrs. J. E. Spagnoletti and Co. we have received their catalogue of Stigler lifts, of the electric, hydro-electric, belt-driven, and hydraulic types for passengers and goods. Among the illustrations in this catalogue there are several designs of handsome cages and hammered iron gates and guards for passenger lifts. So far as it is possible to judge from illustrations, the various forms of operating mechanism applied to these lifts are of sound and workmanlike construction. The most interesting feature of the Stigler lift is the push-button system which, it is claimed by the makers, insures perfect safety under all conditions, and can be used by anyone without an attendant. The car will not commence to move until the door of the car and the doors of all the inclosures on the landings are closed. These latter remain locked and cannot be opened while the car is on its journey, and the only door that can be opened is that on the landing opposite the car when this is at rest, the others still remaining locked. If the door of the car be opened during a journey, the lift will immediately stop, and will only go on again when the door has been closed. There is placed in the car a stop button, so that passengers may stop the car *en route*, and, if they desire, change its direction or bring it to the ground floor without leaving the elevator. When the elevator is in motion it is entirely under the control of the passenger or attendant, all buttons on the inclosures at the different floors remaining inoperative until the car is at rest. If any door is opened, either of the car or of the inclosures on the landings, all buttons are inoperative. Therefore great care must be exercised in seeing that all doors are kept closed. All passenger lifts are fitted with three safety gears, placed one beside the other, and each one has a different purpose. In each of these cases the stopping of the cage is effected by wedges worked by three different gears. Thus (1) if the cable breaks, by a strong arrangement of levers and springs; (2) if the cage meets with any obstacle, by means of a balanced frame which is lifted parallel to its initial position; and (3) if the downward speed becomes too fast by the action of a pendulum apparatus. Stopping at the exact levels of the floors is obtained by means of a regulator which operates efficiently whatever may be the load, and without any jerking. The motor is fitted with an electric brake, which is loosened only when the circuit is broken. As soon as the travel is stopped, the brake works automatically, thus preventing the rotation of the winding drum. Should the car, during its descent, be held for any reason on its safety gears, a commutator at once stops the winding drum, preventing the further unwinding of the ropes.

Messrs. Arthur L. Gibson and Company, of London, send us their catalogue of the Kinnear steel rolling doors and shutters, which have been largely used in tramway and railway car sheds as well as in warehouses, shops, and office buildings both in this country and the United States. These doors and shutters consist of curved interlocking steel slats, fitted with malleable iron reinforced edges, providing an excellent wearing edge. Many different types of construction are described in the catalogue, with front elevations, vertical and cross sections, and end views showing the mechanism for raising and lowering the doors and shutters illustrated. While all the doors and shutters are useful for fire protection, some are specially designed for this purpose. One type is equipped with an automatic closing device, which operates at a temperature of 150 degrees F., and the curtain is released by compound levers so arranged that they are positive in action, and respond immediately to the separation of a fusible link suspended in the centre of the opening. Tension springs are provided, giving an impulse, which causes the shutter to descend rapidly as soon as released by the melting of the fusible metal.

A list of Patschke's vertical drawing apparatus for engineers and others, which is provided with scientifically designed drawing rails and guides, has been sent us by Mr. E. C. Koop, of London. By the application of weights, cords, and rollers the drawing boards, rails, and drawing instruments can be moved up and down, and the latter sideways, without bringing them out of their true position, and the draughtsman can bring the boards into any desired position from horizontal to vertical by set screws or by a slight pressure on the board. A top frame is also provided for holding the design to which the draughtsman may be working. While the draughtsman is at work only the upper edge of the rails come in contact with the drawings, the lower edge being kept away by roller bearings. The rail is balanced by counterweights, and always moves in a true position to the drawing. The largest sizes of squares which a draughtsman is in the habit of using most are connected with, and move up and down with, the drawing rail. This apparatus is made in various sizes and patterns for attachment to an ordinary table, to be supported on an easel or mounted upon a cabinet containing drawers for paper and plans.

The Atmospheric Steam Heating Co. of Grays Inn-road, W.C., send us a pamphlet describing in detail their system of warming buildings by the use of steam at or below the pressure of the atmosphere. The object of this pamphlet is to expound the advantages of a system of steam circulation "without pressure," and further to demonstrate the wide field thereby opened for the utilisation of exhaust steam in a profitable manner. Section I. is a general explanation of the system advocated, the details of which are more fully set forth by means of a typical specification given in Section II., and Section III. contains various data and miscellaneous information such as are likely to be required by those who contemplate adopting the system. Other sections in the pamphlet relate to exhaust steam heating, to the "exhauster" form of "atmospheric" heating, and to auxiliary appliances of different kinds. This system in one form or another has been adopted in many important buildings, to which reference is made in the pamphlet.

MR. PERCY PITMAN, of Ledbury, sends us a list of his "Pelton" water-wheels and turbines for any pressure of water, and of his special high-pressure "Pelton" water motors suitable for pressures of 700 to 1,000 lb. per square inch.

A very neat arrangement is shown of a Pelton water-wheel, with shaft coupling and extended bed-plate, for direct connexion to a dynamo. When fitted with the Pitman automatic governor this motor should be found useful for electric-light installations in country houses and other places where water power is available.

Messrs. C. and A. Musker, of Liverpool, send us a catalogue illustrating their overhead travelling cranes. One illustration represents a thirty-ton overhead electrically-driven travelling crane, as supplied to the Mersey Railway Power House, at Birkenhead. The gear for this apparatus is shown in greater detail by two separate illustrations. Another sheet shows the gear for a ten-ton hand-power travelling crane, as supplied to the Exeter Corporation. Both types of crane are of massive construction and good mechanical design.

Mr. Andrew Brown, of London, has sent us a copy of the 1904 catalogue issued by Messrs. F. Meguins and Co., of Dillingen-on-Saar, Germany, containing particulars of perforated iron, steel, copper, zinc, and brass in sheets and plates up to 1 in. thick. In addition to plates with perforations of all shapes, this catalogue refers to embossed plates, which are more easily cleaned than ordinary chequered plates and do not hold water to the same extent. There are also numerous patterns of ornamental perforations suitable for machinery guards, lift enclosures, heating apparatus, and other purposes.

We have received from Messrs. W. H. Willcox and Co., of Southwark-street, their catalogue of motor engineers' specialties, which are too numerous for detailed mention, but we may say that they comprise practically all the materials, tools, and appliances likely to be required by the owners or drivers of motor cars, motor wagons, and road locomotives

Messrs. Hendry and Pattisson have sent us their new illustrated catalogue of heating and ventilating appliances, of which the most important are the well-known Boyd's patent "Hygiastic" ventilating stoves and grates. The stoves are now made in various patterns and sizes, with single or double fires and descending flues, and have been extensively used in hospitals. The grates admit warm air in a similar manner, and are supplied with iron or faience mantels of simple design. The appearance of the non-ventilating grates is less satisfactory. Among the other contents are inlet and outlet ventilating cowls, gas-heated radiators of the sectional type, and kitchen-ranges.

The Phœnix Engineering Company, Limited, Chard, send us their catalogue of municipal appliances and contractors' requisites, including apparatus and machines for road making, repairing, and cleansing; contractors', well sinkers', and other pumps; winches, hoists, and shear legs. This firm are also makers of manhole covers and frames, and cast-iron water tanks.

The Student's Column.

ARCHES.—XXI.

IN the present article we give details of the masonry bridge now on the point of completion at Plauen, in Saxony. This structure, of which Fig. 84 is an elevation and Fig. 86 a quarter plan, is remarkable as having the longest span of any masonry arch hitherto built. It was designed by Mr. C. H. Liebold to connect the opposite sides of the Syra Valley, and thus to afford convenient means of communication between the two parts of the town of Plauen. The valley itself also forms part of the town, and, as it is traversed by a highway, it was thought desirable to provide for a single span, thus avoiding the necessity for intermediate piers, which would have been objectionable under the circumstances.

As will be seen from Fig. 85, the span of the arch is 295·2 ft. and the rise above the bottom of the foundations is 59 ft. The joint of rupture on each side of the arch ring is at the height of 37·7 ft., so that the portions of the arch below these joints may be regarded as forming parts of the abutments, leaving the central portion, which really acts as an arch, with the span of 213·2 ft. and the rise of 21·3 ft. The thickness of the arch ring at the crown is 4·92 ft., and at the joint of rupture 6·56 ft. But practically the ring is 8·2 ft. thick, as the masonry of the solid backing may be treated as a portion of the arch ring. The arch is struck from five centres, with one radius of 344·5 ft., two radii of 191·9 ft., and two of 98·7 ft.

Through one abutment passes a small arched opening for traffic with a span of 43·3 ft. and a height of 19·9 ft. This arch has a rise of 16 ft., and is struck from three centres with radii of 26·9 ft. and 14·4 ft. As shown in Figs. 84 and 85, the backing of the main arch is lightened by the construction of arched openings perpendicular to the axis of the bridge. These openings are 16·4 ft. wide by 13·1 ft. high, and pass through the entire width of the bridge, thus giving the structure a lighter appearance and keeping the weight of the backing within proper limits.

The construction of the spandrels is shown by Fig. 87, which is a section on the line A B of Fig. 85. It will be seen that the spandrel walls are lightened by external arched recesses, thus affording adequate support for the footpaths without the use of unnecessary masonry. It will be observed, also, that the footpaths are corbelled out, this arrangement having for its object a similar limitation of weight. The external arched recesses are 9·84 ft. wide and 3·9 ft. deep, and their employment in this manner serves to break the monotony of what would otherwise be a wide expanse of plain wall surface, although it cannot be said that the treatment of the masonry below them is at all happy. This, however, is a matter with which we are less concerned than with details of a strictly engineering character.

The spandrel filling is of masonry, built in the form of six vaults parallel to the axis of the bridge. The two side vaults measure 5·9 ft., and the others 4·9 ft. wide, the walls between them being 1·3 ft. thick, and the arched vault covers have a rise of 1 ft. At each end of the bridge the vaults are connected by openings 6·6 ft. wide by 8·2 ft. high, so as to save masonry and to facilitate inspection, manholes being provided to afford means of access from the street. The vaults are closed by walls 16·4 ft. high, and from 2·6 ft. thick at the top to 4·9 ft. thick at the bottom. These walls and the openings between the vaults are shown in Fig. 85.

For the construction of the arch, a hard slate found in the vicinity of Plauen was used, and Bavarian granite was employed for the quarry stones of the wings, the corbelling of the footpaths, the moulding, the balustrade, and for a stairway connecting the valley with the roadway of the bridge. The stairway includes sixty-six steps, 9·84 ft. wide. The total width of the bridge between balustrades is 55·7 ft., including a roadway of 36·1 ft. wide and two footpaths, each 9·84 ft. wide. The roadway slopes from the centre with a gradient of 1 : 240, in order to provide for surface drainage, and it may be mentioned that the arch masonry is protected from dampness by asphalt felt, suitable provision being made for the removal of water by drains at the abutments.

In a work of this magnitude it will be readily understood that the most precise computation is demanded. It is necessary to take into consideration not only the weight of the structure and the incidence of the moving load in different positions, but also changes due to temperature variations and wind pressure.

In the first place, lines of resistance were determined (1) for the dead load of the completed bridge, (2) for a superimposed live load covering one-half of the span, and (3) for a superimposed live load covering the whole span, the live load being assumed to be equal to that given by trains of steam rollers. These determinations were afterwards verified by the theory of the elastic arch. The most unfavourable positions of the live load were determined for the three most critical joints—namely, the crown and springing joints, and the joint of rupture, the position of the last named being ascertained by calculation.

It was then found that the pressure on the masonry of the arch would be 953 lb. per sq. in. and on the foundations 341 lb. per sq. in., and, further, that the line of resistance was such that in no part of the structure would the masonry be exposed to dangerous stresses, and that no important

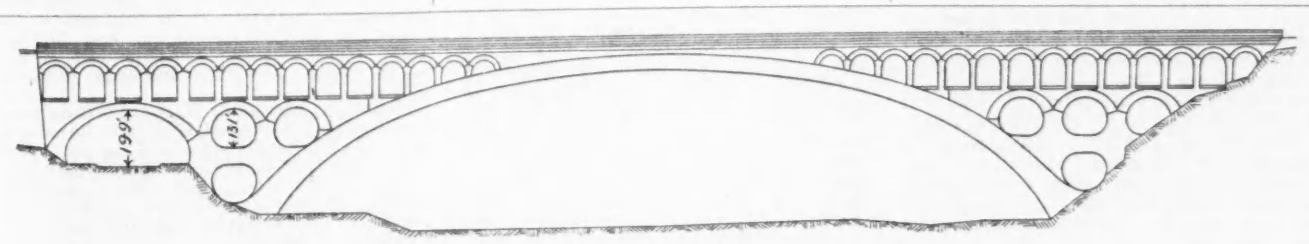


FIG 84 ELEVATION

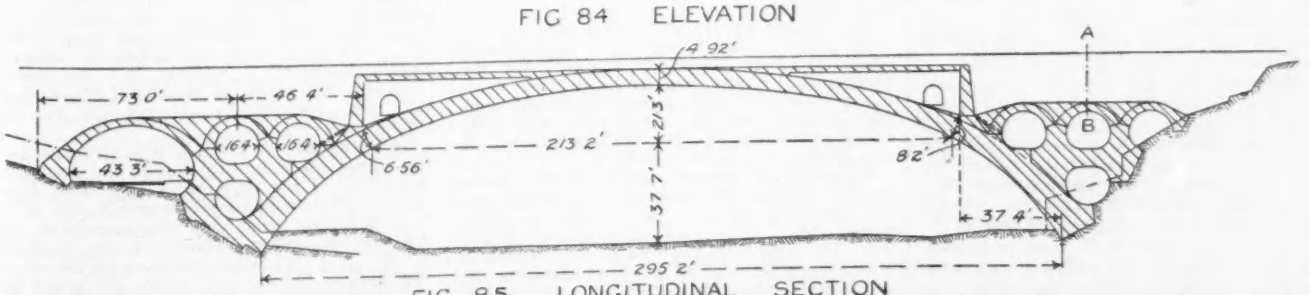


FIG 85 LONGITUDINAL SECTION

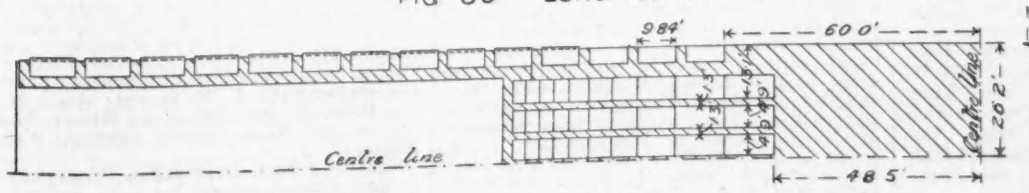


FIG 86 QUARTER PLAN

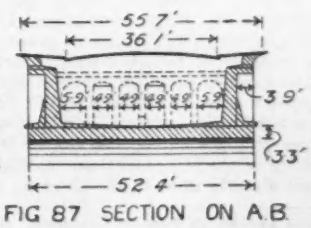


FIG 87 SECTION ON A.B.

increase of stress would be caused by temperature variations. The normal temperature was assumed at 50 deg. Fahr. and a rise and fall of 72 deg. Fahr. was taken into account.

As we have before pointed out, it is very usual in modern practice to provide masonry arches with hinges, so that the line of resistance shall pass through the middle of the crown and springing joints, and to permit the masonry of the arch to accommodate itself to the alteration of form that is invariably due to the load imposed upon the centring. In the Plauen Viaduct, however, there are no hinges, for it is correctly considered that in an arch of such immense size friction at the hinges would be so great as to make it impossible for them to operate. Further, it was not thought necessary that the line of resistance should pass through any specified points, as its position was found by determination to lie sufficiently near to the centre of the ring at all points to insure safety against undesirable stresses.

It was decided to load the centring before the construction of the arch, so as to impart to it beforehand the slightly flattened curve that would be caused by the weight of the completed arch ring. It has been observed that whatever precautions may be taken, the centring invariably settles, thus causing cracks and fissures at every point where keying is effected. Accordingly, it was determined in this case to place upon the centring all the material to be used in the construction of the arch, and to build the ring in several sections in a manner very similar to that already adopted by M. Séjourné.* Before the several sections were keyed up measurements were taken which showed the depression at the crown to be less than 1 in., which is very little in a span measuring 295 ft. and weighing about 12,000 tons. Consequently it was considered that this represented the maximum change of form, and the various sections of the masonry were keyed.

The foundations of the viaduct are upon hard volcanic rock, which occurs at a depth of from 4 ft. to 6 ft. below the surface. Steps were cut into the rock, as shown in Fig. 85, to prevent any tendency for the foundations to slip. Some difficulty arose in places where the remains of disused mine levels were encountered, and, as it was impossible to ascertain how far or how deep similar workings might extend, it was decided to fill the levels discovered with concrete and, for the sake of additional security, to reinforce the concrete with a grillage of 18 in. rolled steel I-beams.

In the construction of the arch the mode of procedure was that usually adopted by Liebold and Co., in which firm the designer is a partner. The upper surface of the sheeting and the side forms of the centring were first covered with Portland cement mortar, which was thrown on with the spade. Upon this layer the voussoirs were placed, care being taken to see that the joints were in the lines of the radii of the arch ring, so as to prevent any tendency of the joints to open towards the soffit, and the mortar used for making the joints was mixed with a minimum proportion of water. The exterior voussoirs of the arch ring are quarry stones, and, in order to give the faces the appearance of cut stones, they were covered with Portland cement mortar. This was done by nailing strips of timber to the side forms and filling the spaces with cement mortar, which has the further advantage of acting as a protection to the stone against climatic influences.

We append some details relative to the centring, a part of our subject which will be discussed generally in a subsequent chapter.

As there were no hinges in the arch ring, it was essential that the centring should be particularly stiff and unyielding. Its construction and foundations presented a somewhat difficult problem, which was successfully solved by Mr. R. G. Holzapfel, another engineer associated with the firm of Liebold and Co. About 56,000 cubic ft. of sawn timber, 28,000 sq. ft. of planks, and 15,000 steel pins were used in the construction of the centring. In order to provide for traffic along the valley, an opening of 16·4 ft. was left through the middle of the falseworks. To insure a secure foundation, a series of trenches was excavated down to the solid rock, these trenches being 65·6 ft. long, 14·8 ft. wide, and about 6 ft. deep. They were filled with concrete, in which were buried spruce planks carrying the timber struts. The framing of the falseworks was so designed that, if laid directly upon it, the sheeting would have had the form of a cylindrical curve. But before the lagging was placed in position timbers of graduated thicknesses were inserted, so that the lagging, when finally fixed, was curved in an upward direction, from the sides towards the axis, and was raised slightly towards the crown. The wedges for striking the centres were designed in general accordance with the same principle, the object of which was to guard against any perceptible variation, as the result of settlement, from the form predetermined in the designs.

The wedges were placed between the second and third stages of the falseworks. The first and second stages consisted of eleven full girders, and between these half girders were provided at the ends of the arch. The third stage had twenty-one full girders, and over them the purlins carrying twenty-one rafters, on which the lagging was secured. The centring served not only to insure the correct shape of the soffit, but also to provide means for coating the faces of the arch ring, as described above. The side forms were held in position by inclined struts resting on planks carried by the extended ends of the purlins.

This viaduct was commenced in May, 1903, the arch ring being finished during November in the same year, and the centring was struck in April, 1904. It is expected that the structure will be opened for traffic during the course of the present summer.

* "Les Annales des Ponts et Chaussées," October, 1886.

OBITUARY.

MR. MARGRAVE.—We have to announce the death, on May 15, of Mr. Frederick Margrave, of No. 32, Bryn-y-Môr-road, Swansea. Mr. Margrave was the senior partner of the firm of Messrs. Margrave and Peacock, of Nos. 19-21, Metal Exchange, Fisher-street, Swansea, who, eighteen months ago, were appointed architects for the theatre at Port Talbot.

GENERAL BUILDING NEWS.

CHURCH, AUCHTERARDER.—Plans have now been prepared for the new parish church at Auchterarder by Messrs. John Honeyman, Keppie, and Mackintosh, architects, Glasgow. The church is to be built on a part of the south glebe fronting High-street. The plan of the church shows a nave of 95 ft. long and 50 ft. broad, with a single aisle 18 ft. broad. At the end of the nave, and centring with it, is a chancel 318 ft. deep and 24 ft. broad. This is separated from the nave by a chancel arch in stone, the aisle being separated from the nave by a series of stone arches, five in number, 13 ft. span, and rising to a height of 13 ft. 6 in. A feature of the building is the corner tower and spire, 16 ft. square, which serves as the main entrance to the church, and rises to a height of 45 ft. Above the vestibule portion of the tower, on the ground floor, there is a bell chamber, with bordered openings on two sides of the tower. Provision is made for organ, vestry, and church hall, these being placed at the back of the church. The estimated cost of the church and church hall is 6,500*l.* Accommodation is being provided for 920 people. The successful contractors are:—Mason work, Mr. Peter Anderson; joiner work, Mr. James Martin; slater work, Messrs. George Mailer and Sons; plumber work, Mr. J. H. Jamieson; painter work, Mr. P. Edwards; plaster work, Mr. W. M'Laren—all of Auchterarder; heating work, Messrs. J. Cormack and Sons, Glasgow.

RESTORATION OF ST. MICHAEL'S CHURCH, MARWOOD, DEVON.—The Church of St. Michael and All Angels, at Marwood, was recently reopened after having been restored. The work has been carried out under the direction of Mr. Edmund Sedding, of London and Plymouth, by Mr. H. Burgess, contractor, of Barnstaple, at a cost of 950*l.*

PRESBYTERIAN CHURCH, ARTHUR'S-HILL, NEWCASTLE-ON-TYNE.—The cost of this new church (to seat 720 people) is 6,400*l.*, including small hall, classrooms, caretaker's house, etc. The architects are Messrs. Badenoch and Bruce, Newcastle. The principal entrances are at the east end in Prospect-place, giving access to porch and large vestibule, at either end of which are fireproof staircases leading to galleries. The style of the building is late Gothic work, and will be built in local stone with hammer-dressed snecked facing and chiselled dressings. The south-east staircase is placed in a tower which occupies the angle of church nearest to Westgate-road. The tower is about 16 ft. square, and rises to a height of 65 ft. above the street, with angle turret 12 ft. higher than parapet of tower, or a total height of 77 ft. The church is planned with nave, aisles, and transepts, the galleries and roof of nave being carried by cast-iron columns. The ground floor has about 400 sittings, and galleries 300 sittings. The ground floor has a fall of 8 in. from vestibule to transepts, and will be laid throughout with wood block flooring on concrete. The pews, pulpit, gallery front, and other interior joiners' work will be executed in pitch-pine. Behind the church, on the ground floor, there is a small hall. On the first floor over same there is a large session room. Beyond the organ chamber there are two classrooms, one having direct access to gallery. The caretaker's house is placed on the second floor. The heating will be by low-pressure hot water, with radiators in vestibule, corridors, and staircases. The lighting will be by electric incandescent lamps. The contractor for the building is Mr. J. M. Whamond, Gosforth. The heating will be carried out by Messrs. Emley and Sons, Ltd., and the electric lighting by Messrs. Thos. G. Usher and Co.

ST. JOHN'S PRESBYTERIAN CHURCH, RUNCORN.—This church is being erected upon a site fronting Victoria-road, and is connected with the existing school buildings, which face York-street, entrances being provided from both streets. Accommodation is provided for about 560—500 on the ground floor and sixty in the gallery over entrances. A cloak-room is arranged near the main entrances, and a vestry for ministers' use at the chancel end of the church. The pews are so arranged as to rise towards the rear and radiate towards the pulpit. The whole of the walls rest upon concrete foundations, and the floors will be of wood block laid on concrete, so that there may be no chance of dry rot or subsidence. The general design is late Gothic in character, and has a tower and spire to the right of the main front. The front to Victoria-road is of red Runcorn stone. The contract, amounting to 3,500*l.*, is being carried out by Messrs. George Parker and Co., of Edge Hill, and the joiners' work by Messrs. J. Paterson and Son, of Liverpool, from the design and under the superintendence of Mr. T. W. Gubbon, architect, of Birkenhead, Mr. Robert Harrop acting as clerk of works.

WESLEYAN CHURCH, DARLINGTON.—A new church was opened on the 18th inst. in the new district of Corporation-road, Darlington, taking the place of a mission-room previously existing. Messrs. Morley and Son, of Bradford, were the architects. The church, which will accommodate 800 people, is in the Gothic style, being of pressed brick with tracery windows, crowned by a tower and spire also of stone. The interior woodwork of pews and ceiling is pitch-pine. The cost is over 6,000*l.*

WESLEYAN CHURCH, KIMBERWORTH.—A new school-chapel has just been opened at Kimberworth, Rotherham. The school-chapel has cost, with site, 2,500*l.* Mr. J. E. Knight was the architect, and Mr. Richard Snell the builder. The building provides accommodation for 300 adults, or, with the classrooms, for 430 children.

METHODIST FREE CHURCH, SOUTH SHIELDS.—The foundation-stones of a new Methodist Free Church were laid on the 23rd inst. at the corner of Birchington-avenue and Oxford-street, South Shields. The architect is Mr. G. R. Smith. The new buildings will cost 4,500*l.*

WESLEYAN MEMORIAL HALL, LIVERPOOL.—A new Wesleyan Memorial Hall is to be erected on a site in Renshaw-street, Liverpool. The cost of the new building will be 37,250*l.*, exclusive of the site, which will cost 4,750*l.* Messrs. Bradshaw and Gass, London and Bolton, are the architects for the new work.

SCHOOL EXTENSION, DEVONPORT.—The memorial stone has been laid of a new wing of the Morice Town Board School, Devonport. The work has been entrusted to Messrs. Pearce Brothers, Plymouth, and the architects are Messrs. H. G. Luff and Cheverton. The total cost of the enlargement will be 2,268*l.*

EXTENSION OF THE HIGH SCHOOL, ABERDEEN.—The extensions in connexion with the Aberdeen High School for Girls have now been completed. The improvements comprise the addition of a new wing and the remodelling of the heating system. The work was planned by Mr. J. A. O. Allan, Architect to the Aberdeen School Board, and carried out under his supervision by the following contractors:—Mason work, James Gauld; carpenter, Hendry and Keith; slater, George Farquhar; plasterer, A Hendry and Son; plumber, Alexander Fiddes; tile work, Alexander Stephen; painter and glazier work, J. W. Forrest; steam heating, Robert Tindall; laboratory fittings, James Garvie and Sons; electric lighting, Walter Simpson.

COUNCIL SCHOOL, DRINGHOUSES, YORKSHIRE.—A new Council school has been erected at Dringhouses from the plans of Mr. W. H. Brierley, architect, of York. The new building

provides accommodation for 300 scholars—viz., 100 boys, 100 girls, and 100 infants—in six separate classrooms of fifty each, four of which are divided by patent folding partitions. The structure has been built of local hand-made bricks, with red sand rubber brick arches and dressings, white painted windows and green Westmorland slate roofs. Inside the building the floors are laid with hard-wood blocks set in asphalte on concrete beds, and the rooms are all warmed by open warm-air grates. Separate cloak-rooms are provided, fitted with wrought-iron coat-rails, and glazed stoneware lavatories and sinks. Mr. W. Barton, of Thorne, near Doncaster, has executed the builders' work, and Messrs. Illingworth, Ingham, and Co., of Leeds, are responsible for the furnishing. The cost has been about 2,500*l.*

SCHOOLHOUSE, ST. SILAS'S PARISH, BELFAST.—The foundation-stone of a new schoolhouse, in connexion with St. Silas's Church, was laid recently in Oldpark-road. The building will be carried out with local red brick and stone dressings. It will contain a room for a mixed school, and there will be classroom accommodation for about 200 scholars. The builder is Mr. J. E. Smyth, and Mr. Henry Seaver is the architect.

KNUTSFORD WORKHOUSE, BUCKLEY UNION.—The third portion of the work of remodelling and extending the workhouse buildings has been in progress, and (with the exception of the foul wards yet to be erected) is now nearing completion. These works comprise:—(1) New dining hall to seat 270, kitchen, scullery, stores for groceries, milk, meat, bread, hardware, etc., bread-cutting and knife-cleaning rooms, wash-up, receiving and weighing-room, general and foul clothes wash-houses, laundry, drying and airing closets, receiving and delivery rooms, laundress's room, water tower and engine-room, the connecting of the able-bodied men and women's wards and male and female imbecile wards with the new dining hall by means of glazed covered ways, the extension of the subways to the able-bodied wards, master's house block and boys' quarters, the extension of the gas and water mains in the new subways to supply the above-named new buildings, the making and forming of new roadways round the remodelled portion of the workhouse, the redrainage of the workhouse by means of an enlarged and deeper main drain, and the demolition of the old kitchen, laundry, and wash-house, dining hall, chapel, and imbecile wards. The contractors are Messrs. J. Hamilton and Son, Altrincham, whose tender was for 6,672*l.* 16s. (2) Providing and fitting-up of wash-houses, laundry and drying closets with complete machinery and engine to drive same, Messrs. D. and J. Tullis, London, 1,082*l.* (3) Providing and fitting-up of kitchen and scullery with complete cooking appliances, Messrs. Moorwood, Sons, and Co., Sheffield, 378*l.* (4) Providing and fixing in subways—steam mains, pipes, and fitttings for carrying steam to work calorifiers providing hot water for heating or domestic purposes, Messrs. Saunders and Taylor, Manchester, 669*l.* 10s. (5) Remodelling of existing bathrooms and the whole of the domestic hot and cold water arrangements in the able-bodied wards and boys' quarters, Messrs. S. Oakley and Sons, Manchester, 236*l.* 19s. (6) Furnishing of new dining hall and kitchen, Messrs. Kendal, Milne, and Co., Manchester, 147*l.* 3s. 9d. Mr. R. J. McBeath is the architect.

HOSPITAL, MANCHESTER.—A new building for Manchester Southern Hospital is shortly to be commenced. The administrative block, containing the residential quarters for the medical officers and staff and for students training in the maternity department will be placed facing Oxford-road and overlooking Whitworth Park. Behind the administrative block, and connected by corridors, are to be three blocks of wards for the maternity department, and for the treatment of diseases of women and children. These have been arranged with the wards facing south, and also graduated in height so as to allow the sun to shine over the lower buildings and into the space between the blocks. Besides the laundry and out-patients' departments at the back of the site an isolation block is provided for the reception of puerperal fever cases which occur in the home patient practice of the hospital, and for which the workhouse and fever hospitals are at present the only places available. The new hospital is designed to accommodate about 100 cases. The plans have been prepared by Mr. J. Ely, architect, Manchester.

NEW LIBRARY, GREAT CROSBY, LIVERPOOL.—The foundation stone of the new Free Library at Great Crosby was laid on the 11th inst. The new building will be faced with red pressed bricks, relieved by Stancliffe stone dressing, and the semi-circular porch will be supported by two granite columns. The library will be heated by hot-water apparatus, and will be ventilated by electric fans. The fittings of the apartments will be in oak. The builder is Mr. P. Tyson, Messrs. Anderson and Crawford being the architects.

PAVILION, BRIDLINGTON.—A new pavilion on the Prince's-parade is being erected under the supervision of the architects, Messrs. Mangnall and Littlewood. The structure is 133 ft. long and 60 ft. wide, and will accommodate 1,700 people sitting and standing. It is built chiefly of iron and glass, with ornamental pillars. The sides are filled in with glazed folding doors, the front is open to the promenade, and is reached by steps which run the whole length of the building. The pavilion has been erected by Bridlington contractors, Mr. A. T. Martindale having assisted the architects in the supervision of the building. The following firms have been engaged in carrying out the works:—Messrs. T. and F. Everingham, enginers, supplied the iron and steel work, and Messrs. Laws, of Glasgow, furnished the cast-iron work; Mr. E. S. A. Smith, roof glazing with Deard's patent; Mr. W. A. Walker, plumbing and glazing; Mr. A. A. Booth, joiners' work, including Messrs. Peace and Norquoy's patent movable shutters; Mr. G. Knaggs, painting and decorating; Mr. Limon, plastering; and Messrs. Sampson and Siddall, brickwork, masonry, and concreting.

THEATRE, WITHERNSEA.—The Withernsea magistrates held a special meeting on the 18th inst. for granting a dramatic licence to the Withernsea Assembly Rooms, which have been altered and converted into a theatre. The stage measures 30 ft. by 47 ft. Underneath the stage are four dressing-rooms and a well space, while under the main body of the building is arranged a tea-room, 62 ft. by 30 ft. The architects for the work are Messrs. Thompson and Kirton, of Hull.

FREE LIBRARY, WILLESDEN.—The new Kensal Rise Free Library was recently opened. The new building is situated at the corner of Bathurst-gardens and College-road, and the entrance has been placed in Bathurst-gardens. The hall is paved with terrazzo mosaic. On the left is the original building, consisting of the newsroom, and on the right wing is the lending library, a room 39 ft. long, 29 ft. wide, and 12 ft. high, with a counter running nearly the full length. Between the newsroom and lending library, at the back of the hall, is placed the librarian's office, with easy access to both rooms. On the first floor, entered from the landing, are the reference library, a room 25 ft. by 25 ft., and a committee-room 20 ft. by 13 ft., both 12 ft. high. Over this floor a room is provided in the roof for the storage of books and for the general use of the staff. The new building is faced externally with red Suffolk bricks with Doulting stone dressings; the windows have stone mullions, with leaded lights and iron casements. The whole building will be lighted by electricity. The fittings throughout are executed in wainscot oak, slightly fumigated and dull polished. The general contract for the building has been carried out by Messrs. Cowley and Drake, of Willesden Green. The fittings have been supplied by Mr. W. E. Tamlin, of Willesden Green, and the electric lighting has been executed by Messrs. G. and H. Turner, of Harlesden. Mr. A. H. Murray-Rust was the architect.

NEW FREE LIBRARY, HAMMERSMITH.—The foundation-stone of the new central library which is being erected on a site in Brook Green-road, Hammersmith, was laid recently. The architect for the new building is Mr. Henry T. Hare, and the contractors are Messrs. C. Dearing and Son.

NEW BATHS, LEEDS.—The foundation-stone of the new swimming baths, which are to be erected in Leeds-road, Leeds, was laid recently. The new building is estimated to cost 6,000*l.* The swimming pond will be 60 ft. long by 20 ft. wide. There will be twelve douche baths for males and ten for females, with slipper baths for both sexes, and also waiting-rooms. The plans for the structure have been prepared by the City Architect, Mr. F. E. P. Edwards, and the contractors are Messrs. John Moulson and Son, Ltd.

NEW OFFICES, WESTMINSTER.—The contract for a block of offices, to be called "Parliament Chambers," facing the Church House and adjoining the Westminster City Library, Great Smith-street, has been signed. Messrs. L. Whitehead and Co., Ltd., are the contractors, and the work is to be commenced at once and completed in twelve months from plans approved by the Ecclesiastical Commissioners, who are the superior landlords. Messrs. Palgrave and Co., of Westminster, are the architects. The building will have a frontage of 125 ft. to Great Smith-street, and be faced with red bricks and terra-cotta dressings, by the Hathern Station Terra-cotta Company, Loughborough, of special manufacture. The construction will be fireproof, and the various upper floors approached by electric lifts.

APPOINTMENTS.

DIRECTOR OF BARRACK CONSTRUCTION.—The War Office announces that Mr. Harry B. Measures, F.R.I.B.A., has been appointed director of barrack construction.

MALVERN.—Mr. W. Osborne Thorp, City Engineer, Ripon, has been appointed Borough Surveyor and Waterworks Engineer for Malvern, Worcestershire. Mr. Thorp was selected out of 233 applicants.

SANITARY AND ENGINEERING NEWS.

SEA PROTECTION AND OTHER WORKS AT GALVESTON, TEXAS.—At the present time the whole of the railway traffic between Galveston and the mainland is conducted over a single trestle bridge, and plans are now under consideration for the construction of a permanent causeway with room for two or more lines of rails. During 1903 the channel from the sea into Galveston Harbour was well maintained, and probably gained somewhat in depth, as the breaches in the jetties caused by the storm of 1900 had been largely repaired. There is now a fairly straight navigable channel of some 28 ft. in depth, and vessels drawing nearly 27 ft. have passed out with ease. The dyke, extending nearly four miles parallel with the wharf front, was completed in 1903, and the dredging of the channel between it and the wharves was finished to a depth of over 30 ft. for nearly one-third of the entire distance. The sea-wall, for the greater protection of the residential portion of Galveston, which was begun on October 27, 1902, will have the total length of 17,500 ft., a height of 17 ft., and a base width of 16 ft. Up to Jaunary 1 last, 9,370 ft., or about one-half the length of the wall, had been completed, and it is expected that the undertaking will be finished in a few months. The United States Government has before it a recommendation of a board of engineer officers to extend, at Federal expense, the sea-wall now being built, so as to join the Government property to the west of the town, and this will probably be done. It will, of course, be necessary to raise the level of a large part of Galveston, so as to slope gradually up to the crest of the sea-wall. This operation will probably occupy about two years, and for the assistance of the local authorities the State Legislature has remitted the taxes due from Galveston for a period of seventeen years.

NUISANCES FROM GARAGES AND MOTOR-CARS.—Dr. Wynter Blyth, in the last issue of the "Sanitary Chronicles of the Borough of St. Marylebone," has the following comment on the above-named subject:—"The Public Health Committee will shortly have to consider the important question of how to deal with the serious complaints of nuisance incidental to the motor-car industry. There are several garages in the district in which cars are stored, charged with petrol, cleaned, repaired, and the engines started to see that each cylinder beats in proper time and that all is in order; during this operation, more especially if the crank chamber is full of oil, or if the engine is dirty, there is considerable smell, and more or less noise. In one case the occupiers of adjoining premises have laid a formal complaint by petition, and there is not the slightest doubt that there is nuisance—nuisance that is inseparable from the industry, and one difficult to deal with without seriously interfering with a growing and important trade. It is the writer's opinion that all garages of the kind should have a special shed or room in which to start the engines; any architect could design, by means of double walls, a practically noise-proof shed; there would also have to be a flue with good draught carrying the waste gases away to the height of the highest chimneys in the neighbourhood. This means a considerable expenditure of money, but when any person establishes a new, noisy, and intermittently offensive business in densely populous localities, he must either spend money in minimising any nuisance incidental to the business, or run the risk of having his business entirely prohibited."

NEW BRIDGE, STAKEFORD, NORTHUMBERLAND.—The work in connexion with the new bridge which is to be erected over the river Wansbeck, at Stakeford, Northumberland, has been commenced. The borings for the foundations have been completed, and show that the rock is situated 37 ft. from the surface on the south side, 24 ft. in the centre of the river, and 20 ft. on the north side. The structure will be 240 ft. in length, and 24 ft. wide, in two spans of 135 ft. each. It will consist of bow-string steel girders, having stone abutments on each side on piled foundations, with a centre pier composed of a cast-iron cylinder filled with concrete, and carried down to the stone head. The piles for the two abutments will also be driven down to the hard formation overlying the stone. The carriage-way will be 20 ft. in width, with a 4-ft. footway.

The bridge roadway will be of steel trough flooring, overlaid with concrete asphalte; and expansion will be provided by steel rollers and a lap groove. The abutments will be of freestone ashlar masonry. The bridge roads will be 24 ft. in width, and 1,400 ft. in length, and will be of macadam, enclosed in creosoted fencing. The total estimated cost is 12,000*l.*, and the plans for the work have been prepared by Messrs. David Balfour and Son, civil engineers, of Newcastle.

FOREIGN.

FRANCE.—A new group of school buildings has been opened at Villiers-sur-Marne, at a cost of 130,000 francs. M. Simon is the architect.——The jury in the competition for a new savings bank at Langres have awarded the first premium to M. Danne, of Dijon; the second to MM. Mienville and Cayotte, of Nancy; the third to M. Heurion, of Epernay; and the fourth to M. Bourgeois, of Poissy.——The jury in the competition for a covered market at Belfort have selected for execution the joint design of M. Jules Doré, architect, and MM. Schwartz and Meurer, constructional engineers.——The Municipality of Coulommiers have opened a competition for a church, at an estimated cost of 375,000 francs.——A new bridge over the Saône has just been completed at Dijon, to facilitate the communication between the departments of Jura and Côte d'Or.——A monument to the memory of Eugène Spuller, formerly Minister of Foreign Affairs is to be erected at Sombernon.——In the sacristy of the small church at Nantes have been discovered fourteen pictures by Corot, painted to illustrate stations of the cross in a procession of the "Chemin du Croix."——During the visit of the President of the Republic to Rome a statue of Victor Hugo has been inaugurated in the gardens of the Villa Medici. M. Lucien Pallez is the sculptor.——The next Congress of French architects will be held at Paris from June 13 to 18, and an excursion will be made to Chartres and to the Château de Maintenon. The seventy-first Archæological Congress of France will be held at Puy from June 21 to 28.——M. Redon, the architect, is to commence shortly the works for the alteration of the Place du Carrousel. Percier and Fontaine's well-known triumphal arch is to be surrounded by a barrier of pillars and chains, and to be completed by stone balustrades, connecting the statues which were formerly framed in the grille of the Tuileries.——It has now been decided that the château and park of Bagatelle, the former property of Sir Richard Wallace, will be purchased by the Paris Municipality and added to the Bois de Boulogne.—A "Société Française des Fouilles Archeologiques" has been constituted, which will carry on the work in Provence, at Aix and Marseilles, as well as in Spain and Egypt.——M. Lucien Humbert, architect, of Nancy, has obtained the premium in the competition, opened by the municipality of Etain, for a group of schools.——A vote of 137,000 francs has been passed by the French Government for the rebuilding of the church of Belle-Isle-en-Mer, Morbihan.—A suspension bridge is to be constructed over the Rhône, at Pyrimont, to connect the department of Haute Savoie with that of Ain.——The Municipality of Toulon have voted a sum of 800,000 francs for the building of new schools.——Important public works are to be undertaken at Lyons, at an estimated cost of 500,000 francs. Among the works projected is included the building of two Mairies, the repair of the Palais des Arts, and the erection of a barrack.——It has been decided to transfer the Musée de Marine of Paris from the Louvre to the Hôtel des Invalides, where the Musée de l'Artillerie is already installed. The double collection will then take the name of "Musée des Armées de Terre et de Mer." The rooms left empty at the Louvre will be devoted to collections of drawings.—M. Besnard, the painter, has commenced the model for the ceiling of the Comedie Française, which will symbolise the apotheosis of the poets Corneille, Molière, Racine, and Victor Hugo. The execution of the work, which will cover a space of not less than 276 sq. mètres, will occupy three years, so that the new ceiling will not be fixed in its place till 1907.——The tomb of Zola, at Montmartre, has just been inaugurated. The monument, designed by M. Frantz Jourdain, the architect, is in red porphyry, and carries a portrait bust of Zola, by M. Solari.——A committee has been formed to purchase, and offer to the Municipality of Paris, M. Rodin's statue of "Le Penseur," at present at the New Salon.——The death is announced of Daniel Vierge, the eminent artist in black and white.——The death is also announced of the following architects:—M. Claudius Papier, member of the Société Centrale, aged sixty; M. Merle, of Paris, aged eighty-six; and M. Jules Montfort, of Nantes, aged sixty, a former pupil of Chenantail and of Questel, M. Montfort was architect of numerous private houses in Nantes and the neighbourhood, and also of the fine monument to Elie Delaunay erected there.

GERMANY.—Professor Friedrich Wilhelm Büsing died at Berlin on February 25, in his seventieth year; Büsing devoted his energies chiefly to the question of hygiene in towns.——St. Petersburg and Berlin are to be put into telephonic communication, and as St. Petersburg and Moscow are already connected, this will also bring Berlin and Moscow in communication; a special connexion is to be laid between Berlin and Warsaw.——A Society has been formed at Dresden for the preservation of the Homeland ("Heimatschutz"). The work of the Society will include the preservation of memorials, and also of natural scenery and ruins; the cultivation of local flora and fauna, the preservation of geological peculiarities, and the encouragement of national customs, feasts, and costumes. Professor Schultze-Naumburg was elected President of the Society.——The Church of St. Paul, at Halle, designed by Herr Matz, under the direction of Herr Beisner, is completed.

AUSTRIA.—A bust of the architect Theophil von Hansen, who built the Houses of Parliament at Vienna, is to be placed over the entrance to the House of Lords; the sculptor Herr Hugo Härdtl is executing the work, which is to be in bronze on a stone pedestal.——In the Vienna House of Arts, the artist Herr Johann Geller received the Emperor's prize of 400 ducats; the two Dobenau prizes of 1,000 k. were gained by the painter Herr Josef Kinzl and the sculptor Herr Theodor Charlemont, and Herr Heinrich Bauchinger received the Jubilee prize of twenty-five ducats.——New public buildings are to be built at Vienna at a cost of 516,000 k. from the plans of Herr Badstieber.——The plans for the enlargement of the Austrian Museum of Arts and Industries submitted by Herr Baumann have been accepted.——A new theatre is to be built at Krems, from the plans of Herr Jos. Utz.——A new fountain is to be erected in the market place at Tetschen; the sculptor, Herr Rudolf Weyr, has undertaken the work.——The architect, Franz Böck, died in Vienna on April 21, in his seventy-second year; Herr Böck was the director of the Union Building Society, and his name is connected with many important buildings in Vienna.

ITALY.—During the past four or five years much valuable work has been done by the board responsible for the preservation and restoration of monumental buildings and works of art in Tuscany. This board consists, so far as technical matters are concerned, of a director and four of the chief architects in Florence. One admirable work performed has been to persuade the government to cease the practice of utilising as military barracks and storehouses many Franciscan convents and chapels. In consequence, six of these fine buildings are now free from such desecration, some have been completely restored, and others are now undergoing repair.——Important works of consolidation and repair are in progress at the cathedrals of Pisa and Siena, and the campanile of Pisa, parts of which are in a dangerous state, is about to be thoroughly strengthened.——The floor and mosaics of the baptistry at Pisa have been restored, and, at the cemetery of the same city, special steps have been taken for the preservation of the frescoes of Benozzo Gozzoli.——The Church of San Giovanni, at Siena, forming part of the cathedral, is now restored to its original form and style, old frescoes once hidden are now brought to light and restored, while at the tower and cathedral of Siena, the decorations and mosaics have been repaired, and ancient windows reopened.——At Florence, the Campanile of the Badia has been restored to its original state; the cloisters of the museum of St. Mark, and the entrance hall of the Palazzo Vecchio, which was once the seat of Government of the Florentine Republic, have once more assumed their ancient style and beauty; the cloisters and campanile of the church of Ognissanti, the façade of the church of San Carlo, in the Via Calzaioli, have been thoroughly repaired; and important improvements have been effected in the Palazzo dei Vetrari, among which may be mentioned the reopening of the magnificent old windows, and the rehabilitation of old and almost forgotten frescoes. Considerable activity has also been displayed in various country districts of the province of Florence, and in the city itself much has been accomplished in the way of improvement to the various buildings containing art treasures of various kinds.

SWITZERLAND.—The sum of 903,000 francs is to be spent on the enlargement and rebuilding of the Post Office Buildings at Geneva.——The new schools at Biberist, designed by Herr Volkart, are built in the style most common in Switzerland in the XVIIth and XVIIIth centuries.

PROPOSED NEW THEATRE, RIO DE JANEIRO.—It having been decided to erect a municipal theatre for the presentation of literary and musical works on a site facing the Praca Ferreira Vianna, Rio de Janeiro, competitive plans for its construction are invited; these will be received up to July 28. Three premiums are offered. The first prize will consist of 10,000 dollars, the second of 6,000 dollars, and the third of 1,000 dollars, to be awarded, in accordance with the decision of the committee, for the best plans presented. The Prefeitura of the capital does not bind itself to follow exactly the plan accepted, but reserves the right to alter or reject any details, or cut them down, as may appear best. The committee is not to be bound to distribute the first and second prizes if the plans presented do not, in their judgment, merit that distinction, and the right is reserved to combine the first and second prizes and divide the sum equally between two competitors should it be deemed advisable. The judging committee will be presided over by the Prefect of the capital, who, in due time, will invite gentlemen of recognised authority in such matters to form part of the committee. Subjoined is a summary of the conditions to be provided for in the competitive plans:—The building is to have capacity for seating 1,400 spectators, of whom 400 will be in a gallery; the architectural and decorative designs of the building to be left entirely to the judgment of the competitors; copies of similar edifices constructed or in course of construction in Mexico or other countries will not be admitted; the building need not necessarily occupy the entire alloted area, but it must conform, not only to the municipal regulation of the capital, but to the strictest conditions as regards safety and hygiene; the use of cast iron must be avoided as much as possible, preference being given to steel over wrought iron; cast iron can only be used where the pressure or strain does not exceed 1,000 kilos. per sq. centimetre; besides the requisite accommodation for the actors, the stores, etc., and for spectators (which is left to the judgment of the architect), the internal arrangements of the theatre must include an orchestra for sixty musicians, located on a level sufficiently below the pit to render them invisible to the spectators, a parquet, a first and second row of boxes, a gallery, and a box (invisible from the pit) for the exclusive use of the Administration; the motive power for working the machinery and for illumination to be electricity, the electric power-house being located apart from the theatre building; the different rows of boxes and the galleries to be sustained, for preference, by iron brackets, in lieu of the columns generally used; the stage building to be separated from the auditorium by a dividing wall with a minimum thickness of 60 centimetres, the base of which shall be on a level with the foundations of the building, and its height be at least 30 centimetres above the roof of the auditorium; any openings made in that dividing wall for communication with the theatre shall be closed by means of a door of iron or other non-inflammable material opening towards the stage; for closing the stage front, a drop curtain of iron or other non-inflammable material shall be used, made so as to open either from the stage or the orchestra side; the cost of construction, exclusive of the cost of internal decoration, not to exceed 1,500,000 dollars.

MISCELLANEOUS.

SIAMESE TEAK TRADE.—In his annual report on the trade and commerce of the consular district of Chiengmai, Mr. Becket devotes some half a dozen closely printed pages to a review of the condition of the teak trade in Northern Siam, and the difficulties which stand in the way of its development. Having regard, however, to the fact that there are 400,000 logs already extracted and lying in the streams and rivers, he concludes that any material diminution in the timber supply is not to be anticipated within the next five years. When once this old stock has been cleared off the effect of the present limited girdling allowed in certain areas will become noticeable in the export returns, and the total annual output will probably fall from an average of 80,000 logs to one of 60,000 or less. "Thus," writes Mr. Becket, "this shrinkage in workable timber will have the immediate effect of throwing idle a considerable amount of labour and capital, and an ultimate effect after five or six years of reducing the output, a reduction, which, unless fresh areas now closed are opened, will become more and more emphasised as time goes on."

THE MIDLAND ENGINEERING BUREAU, DERBY.—This organisation, planned on lines often

adopted in the United States, is intended to provide tuition in constructional steelwork design by correspondence. The classes start monthly, so that pupils can be enrolled at any time and commence their studies at once. In arranging the courses, practical utility has been kept chiefly in view. Examples taken from average office practice are analysed and thoroughly considered, and special attention is given to the difficulties encountered by the designer when dealing with the multifarious questions that daily occur. The intending pupil is offered a choice of two courses, the first being specially suited for those who, being already engaged in the design or manufacture of constructional steel work, have some knowledge of their subject, and the other for those who have little or no previous knowledge. Practically, the former embraces the whole of the usual applications of mild steelwork, while the latter treats of it only as applied to building and architectural works. The first, therefore, is specially suited for engineers and draughtsmen, and the second for architects and surveyors. At regular intervals, original lectures and notes are sent to each pupil, and accompanying these are questions which the student is expected to answer. It may be remarked that in neither course are the higher mathematics used, and any student familiar with vulgar and decimal fractions can thoroughly follow the whole of the work without difficulty. To such students as may be prevented by circumstances from attending classes at technical colleges or institutes, the system of study here mentioned may be found of service.

BROAD FLANGE BEAMS.—There is no doubt that many of the sections in which steel joists are commonly rolled are inconveniently narrow for architectural purposes, although perfectly suitable for most engineering requirements. Where a deep and narrow rolled joist is employed in a building, as, for instance, to serve the purpose of a bressemer over a shop-front, there are often forces which tend to rotate the member about its longitudinal axis. A narrow joist so used has little resistance to such action, and means of preventing it cause unnecessary expense and trouble. The series of wide-flanged beams, introduced by Messrs. H. J. Skelton and Co., are calculated to meet such difficulties and others experienced by the architect. These beams are not only more stable when placed on their beds than those of ordinary section, but permit more satisfactory joints to be made. For the connexion of beams with columns or stanchions, both the main girders and the joists are secured to the columns by a pair of flange-brackets and a pair of web-brackets. Owing to their wider flanges, the beams admit of far wider, and therefore stronger, fastenings to the flanges than is possible with ordinary sections, and it is evident more bolts or rivets can be used in a wide flange without causing undue weakness. Thus the girders are greatly stiffened, and, in a sense, the free length of the beam is lessened, the stiffened ends serving to increase the carrying capacity of the beam, and to decrease deflection. Another special point in connexion with joints made with this type of section, is that stanchions can be stepped into the full depth of the main girders, and held so securely that the value of a column with fixed ends can be approached much more closely than with ordinary column connexions. There is, unfortunately, a tendency among designers to pay insufficient attention to the connexions of steelwork in buildings. Steelwork is often erected upon inadequate foundations, and sometimes heavy loads are really carried by a few ¾-in. rivets. It should always be remembered that a slight inequality or defect in practical work may throw the whole load of a column upon its connexions. Moreover, it is absolutely essential that the lateral stability of any steel structure should be as carefully attended to as its strength with respect to vertical loads. The type of beam here described should certainly conduce to lateral stability, and, owing to the width of the flanges, it can often be employed in cases for which built-up sections would otherwise be necessary. Among the incidental advantages possessed by broad-flanged beams, we may mention the greater accessibility of bolts and rivets; and the facility afforded for painting all parts of the construction, a course which is not generally practicable with built-up girders.

LABOUR MARKET IN GERMANY.—Mr. Schwabach, British Consul-General, in a report on the trade of Germany for 1903, mentions that the condition of the labour market during the first half of the year was more favourable than in 1902. The improvement referred especially to the textile industry, the building trade, and some branches of the iron industry. In July this generally favourable tendency increased in consequence of the great demand for agricultural labourers and the consequent decreased influx of these labourers into the towns. The returns of the labour market were most satisfactory in September, in which month the percentage of applicants fell to the standard of the very favourable September of 1900. It was generally noted with satisfaction that the labour market for males, which had been overcrowded for two years, had improved considerably. The building trade again attracted large numbers of workmen; in fact, last year was characterised by an unusual activity in building. Wages have recovered from the reaction in trade much less than the extent of occupation. The depression in prices since the middle of 1900 had necessitated an average decrease in wages, and a reduction in the hours of labour, which became still more accentuated by reason of severe restriction of production, etc. During the period of reaction, disputes, aiming at increase of wages, had no chance of success, and, in view of the condition of industry, were not justified. It was not until the year 1903 that wages and labour disputes assumed greater proportions, chiefly in those industries in which business was comparatively brisk. They were particularly frequent, although generally of short duration, in the building trade. The activity in that trade favoured the demands of workmen in many quarters, which varied considerably according to the standard of living and general condition of wages in the different parts of the country. As a rule the objective was to bring about decreased hours of labour—in some parts abolition of piecework—everywhere, of course, a demand for higher wages, and in many places a fixed scale, either for one year or a number of years. Long hours of work and low wages obtain in the building trade in Silesia; for instance, the wages of bricklayers for an average working day of eleven hours are so low that almost everywhere "overtime" is done, a day of fourteen hours being frequent in summer. In the three Silesian towns of Beuthen, Kattowitz, and Konigshütte, the bricklayers received, in 1895, 25 or 26pf. per hour; in 1898, 26½ or 27pf.; in 1900, 29pf.; and in 1902, 25pf. per hour. In the north and west of Germany, considerably higher wages are being paid. At Cologne the bricklayers demanded a minimum wage of 55pf. (6¾d.) per hour; in Hamburg, the carpenters were granted 70pf. (8d.) per hour, and a working day of nine hours. In Hanover, an agreement was arrived at on the basis of 52pf. (about 6¼d.) per hour for bricklayers, and 40 pf. (5d.) per hour for labourers, working nine and a half hours per day. In Düsseldorf, the bricklayers demanded a minimum of 55pf. (6¾d.), and in Elberfeld, Barmen, and Dortmund 48pf. (5¾d.) per hour, for a day of ten hours. Fixed scales, regulating the hours of labour and wages have been adopted in a number of places. In the carpenters' trade these scales were in 1902 operative at twenty-seven places, and in May, 1903, at fifty-three. In larger towns, where price scales were in force, the total hours of work and the wages earned in the year 1902 were as follows:—

Locality.	Total Time Worked Per Annum.	Annual Wages.		
		£	s.	d.
Berlin	2,610½	84	16	10
Bremen	2,572½	77	3	6
Hanover	2,674	66	17	0
Kiel	2,731	81	18	7
Leipsic	2,512	69	1	7
Magdeburg	2,746½	64 to 68	10 to 13	11 to 8
Mannheim	2,822½	63	10	2
Stettin	2,783	68	1	9

COMMONS AND FOOTPATHS PRESERVATION SOCIETY.—The report of the Kent and Surrey Committee of this Society for 1902-3 states that during the year under review the Committee's aid was sought in over forty cases involving the preservation of commons, village greens or open spaces; and in addition to the work of protecting commons and open spaces, no fewer than sixty-eight cases of interference with rights of way were dealt with by the Committee in 1902. More cases were dealt with in 1902 than in any previous year. They have embraced disputes with reference to footpaths, bridle ways, roadside wastes, commons, common fields, fuel and poors allotments, village greens, and ponds, in various parts of the two counties. The Committee records with satisfaction that schemes are proceeding for the regulation of Merrow Downs, Oxshott Heath, and a portion of Horsell Common. In a number of other instances it is probable that schemes will also be promoted in the near future. The threatened enclosure of portions of Sevenoaks and Fawke Commons has led to the formation of a vigorous centre of the Committee for Sevenoaks and the surrounding district, and mainly in consequence of its efforts the proposal was abandoned. The work of scheduling commons and rights of way is proceeding as rapidly as possible, and has now been completed or is progressing in respect of over 108 sq. miles of Surrey, and 36 sq. miles of Kent. It is hoped eventually to publish maps recording the result of the researches conducted by the Committee. It is added that, through the generosity of a supporter, 1,000*l.* has been guaranteed by the Commitee towards the cost of the scheme for purchasing the summit of the Oak of Honorhill, in Camberwell, as an open space, and the Committee is glad that the agitation which followed the enclosure of the hill in 1897 will eventually lead to the permanent preservation of the summit.

DISFIGUREMENT BY ADVERTISEMENTS.—A circular letter has been received by the Metropolitan Borough Councils from the Secretary of the Royal Institute of British Architects drawing attention to the abuse of buildings by advertisement hoardings, and urging the importance of powers being acquired by public authorities to regulate the display of advertisements which threaten permanently to disfigure the streets, and to destroy architectural significance in buildings. The communication will be considered by the General Purposes Committees of the various councils.

THE OLD CASTLE OF DUMFRIES.—At a meeting of Dumfries Antiquarian Society recently, Mr. James Barbour, architect, read a paper on "Vestiges of the Old Castle of Dumfries," to which Robert Bruce proceeded when he had slain Comyn at the monastery of the town, and which was captured from the English garrison. The castle was at the south end of the town, close to the river Nith, in a property known as Castledykes, and which was lately purchased by the Town Council to obtain on part of the land a site for sewage purification works. Mr. Barbour stated that it had been a moated castle, and the fosse encompassing the citadel could still be clearly followed on the north, east, and west sides. On the east side, where it is open and practically intact, it is from 25 to 30 ft. deep, 6 ft. wide at the bottom, and 50 to 60 ft. wide at the top. They appeared to be as large and formidable barriers of defence as any of the ditches of military works reported in the proceedings of the Society of Antiquaries of Scotland. Edward I., in the year 1300, greatly strengthened the castle. According to calculations made by Dr. George Neilson, in his monograph on "Peel, its meanings and derivation," ditchers to the number of 250, with some women helpers, worked on the fosses for a fortnight, and sixty to 100 carpenters, with two dozen smiths, were continuously at work for a period of between two and three months, cutting timber in Inglewood Forest, Cumberland, and in woods near Dumfries, transporting the material and constructing with it a strong palisade round the castle. Whether the palisade was the only carpenter work overtaken seemed doubtful, considering the number of workmen employed and the time occupied. Might not the scheme of strengthening the place embrace the building of a wooden tower? It was a notable circumstance that masons were not represented among the craftsmen. We had no evidence of stone buildings. The Chairman (Mr. W. Dickie) expressed the hope that the Town Council would carefully preserve the still existing remains of this historically interesting castle, and do something to restore portions of the fosse which had been filled up; and Mr. Barbour said he hoped to see the property soon added to the public park.—*The Scotsman.*

CLOSEBURN RED FREESTONE.—One acknowledged disadvantage attending the employment of limestone, dolomite, calcareous sandstone, and some other building stones, is their rapid deterioration in the atmosphere of large cities. The Closeburn freestone, which has been quarried in Dumfriesshire for fully two centuries, has been found by practical experience to possess remarkably good weathering qualities, being very little affected by acids and variations of climate. Its endurance is sufficiently evidenced by the excellent condition of various buildings in Glasgow, and in the manufacturing districts of Lancashire. We have recently had an opportunity of examining a specimen of this stone under the microscope, and find that it is made up of a mosaic of pieces fitting rather closely, with a cementing matrix. The fragments forming this mosaic are of quartz, angular and sub-angular in shape, fairly uniform in size, and appear to be derived from granite rocks, the cement by which they are held together being of ferruginous siliceo-argillaceous character. Although the quartz grains do not exhibit the secondary growth possessed by some sandstones, they are firmly interlocked and joined by a chemically stable cementing material.

Another advantageous feature of the stone is that lamination planes appear to be entirely absent, a fact apparently attributable to the small proportion of mica present. Chemical analysis shows an entire absence of lime, and that nearly the whole of the iron present is in the stable form of ferric oxide. To the latter circumstance may be attributed the durability of colour distinguishing this stone. The Closeburn quarries are now equipped with modern stoneworking plant for the purpose of preparing selected stones while the material is still soft and filled with "quarry water," which, being brought to the surface and evaporated, leaves behind an indurating skin or crust protecting the surface from hostile influences. Although extensively used in Scotland and the North of England, this stone is but little known in London, the only building where it may be inspected, so far as we are aware, being the infant schools, in Railway-street, Barnes.

CAPITAL AND LABOUR.

A SCHEME TO AVOID STRIKES IN THE BUILDING TRADE.—At the North-Eastern Hotel, York, a conference took place recently (as we mentioned in our last week's issue) between ten representatives of the Yorkshire Federation of Building Trades Employers and a similar number of representatives from the headquarters of operatives' organisations, for the purpose of discussing the question of closer union between masters and men "upon a broad principle of equity." The following scheme, which had already been discussed and approved by the master builders' associations in Yorkshire, was mutually agreed to, and a resolution passed that it be referred to the respective national associations in the hope that it would find general adoption:—(1) That local committees shall be appointed in all districts where labour is sufficiently represented to warrant the formation of such a committee, by both masters and men, for the purpose of dealing with questions in dispute of a minor character, and also with questions of greater importance in the initial stages of the grievance, with a view to settling disputes locally. The minutes of the proceedings shall be taken by each secretary. (2) That a county conciliation board shall also be instituted, which shall be elected annually, and shall consist of two representatives from each section of building trades of operatives, of the one part, and a like number of representatives of the Yorkshire Federation of Building Trade Employers of the other part, whose duties shall be to consider any question upon appeal from the local committee. (3) It shall be competent for the local committees to hold meetings, but time to be occupied shall not be more than fourteen days from date of notice from either side on any case brought under its notice, and, if a satisfactory settlement cannot be arrived at within the month, it shall be the duty of the secretaries of the local committees to notify either side to the other that notice must be given to the county conciliation board within ten days to convene a meeting, for the purpose of hearing the appeal from the local committees as early as possible. The minutes of the local committees, together with the chairman's report, must also be submitted to the county board. (4) Should the county conciliation board be unable to agree after all matters, minutes, and correspondence in reference to the question at issue shall have been openly and freely discussed (at one meeting only), and the questions in dispute shall not have been settled, then it shall be competent for either side, within seven days after such sitting of the board, to appeal to the Board of Trade to appoint a referee or arbitrator, whose decision shall be final and binding on all parties, and the cost incurred thereby shall be borne equally between operatives and employers. (5) It shall be clearly and distinctly defined that, pending the settlement of any dispute or alteration of rules, in passing through the various stages, no stoppage of work shall be allowed under any pretext whatever.

Legal.

WORKMAN'S CLAIM FOR DAMAGES AGAINST EMPLOYER.

THE case of Rouse *v.* Dixon came before a Divisional Court of King's Bench, composed of the Lord Chief Justice and Justices Wills and Kennedy, on the 19th inst. on the appeal of the plaintiff from the decision of the County Court Judge of Croydon.

The facts were these:—The plaintiff, a workman in the employment of the defendant, on September 8, 1903, sustained personal injuries in the course of his employment during some building operations. On September 30 the plaintiff gave the defendant notice of the injury, and on October 14, made a final request for arbitration under the Workmen's Compensation Act, 1897. Defendant filed an answer that plaintiff was not entitled to compensation under the Act, as the building on which the accident happened was under 30 ft. high. The plaintiff then gave defendant notice of abandonment of his claim for compensation under the Act, and the matter, not being proceeded with, defendant was awarded the costs incurred in respect thereof. On January 21 plaintiff started an action for damages in respect of the same injuries under the Employers' Liability Act, 1880. When that action came on for hearing in the Croydon County Court, defendant took the preliminary objection that, plaintiff having made a request for arbitration under the Workmen's Compensation Act, and had exercised his option under section 1, sub-section 2, his action under the Employers' Liability Act was barred. The County Court Judge adopted this view, and gave judgment for the defendant without hearing the case on its merits. Hence the present appeal of the plaintiff.

At the conclusion of the arguments of counsel, the Lord Chief Justice, in giving judgment, said that a workman was only debarred from taking alternative proceedings where he had exercised an effective option, and, in his opinion, when the workman had acquiesced in a preliminary objection to proceedings which he had, by mistake, commenced, and had been ordered to pay the costs of those proceedings, he was not debarred from bringing an action to obtain damages under the Employers' Liability Act. He thought the appeal must be allowed, and the case remitted to the County Court to be heard on its merits.

Justices Wills and Kennedy concurred.

Mr. Broxholm appeared for the appellant, and Mr. Griffith Jones for the respondent.

POINT UNDER THE METROPOLIS LOCAL MANAGEMENT ACT.

THE case of Skinner *v.* Hunt and others came before the Court of Appeal, composed of Lords Justices Vaughan Williams, Stirling, and Cozens-Hardy, on the 20th inst., on the application of the defendants for judgment or new trial on appeal from verdict and judgment at trial before Mr. Justice Ridley and a common jury in the King's Bench Division.

In this case the plaintiff claimed damages against the defendant for alleged wrongful distress, the defendants counterclaiming against the plaintiff for two quarters' rent. The case was tried before Mr. Justice Ridley and a common jury, and the jury awarded the plaintiff 50*l.* damages on the claim. The case was then argued before his lordship on a point of law arising on the admitted facts under section 96 of The Metropolis Local Management Act, 1862. The admitted facts were these:—The plaintiff was the tenant and occupier of a shop, under a lease from one, Budd, for a term of twenty-one years, at the rent of 40*l.* per annum, being payable quarterly. The lease contained a covenant by the lessee that he was to pay all rates, taxes, and assessments whatsoever, and all charges imposed by any local authority upon the frontages in respect of the taking over the roads and footpaths abutting upon the demised premises, or the making or repair thereof.

On February 22, 1900, plaintiff received notice that defendants had been appointed receivers of the rents of his premises, and that he was to pay his rent to them. On December 18, 1902, the plaintiff had a notice served upon him from the Wandsworth Borough Council not to pay his rent without first deducting 34*l.* 19s. 2d., due to the Council under an apportionment of the estimated cost of paving the roads and footpaths. On January 20, 1903, the plaintiff paid the Council 10*l.*, the quarter's rent due from him at Christmas, 1902, and informed the defendants of the fact. On January 22, 1903, the defendants demanded payment from the plaintiff of the rent due from him on December 25, 1902, which the plaintiff did not pay, and on February 12, 1903, defendants levied a distress upon the plaintiff's premises, and then the plaintiff brought the present action. On behalf of the defendants it was contended that, by the terms of the covenant, the plaintiff had entered into in his lease, he could not deduct what he had to pay out of his rent, and that, as he had not paid his rent to them, the distress was lawful.

On behalf of the plaintiff it was contended that the charge for paving was, by The Metropolis Management Act, 1862, imposed upon the owner, as it was an improvement of his property, and that the Council were going to take from the tenant what the landlord owed, and that therefore the distress was illegal. Mr. Justice Ridley held that, in the circumstances of the case, the right to distrain had gone, and that there must be judgment for the plaintiff for the 50*l.* damages on the claim, with costs, and also for the plaintiff on the counterclaim, with costs. Hence the present appeal of the defendants.

Mr. J. A. Hawke appeared for the appellants; and Mr. Lushington and Mr. Tindal Atkinson for the respondent.

At the conclusion of the arguments of counsel Lord Justice Vaughan Williams, in giving judgment, said that the question was whether, at the moment when the distress was levied, any rent was due for which the landlord could distrain. If the rent was due there was nothing wrong in the distress; if it was not due the distress was wrongful. The real question was whether the tenant, having regard to the terms of his lease, had a right to deduct, or set off, this payment when he was called on to pay the rent. On the terms of the lease it was clear that, if it was a payment of the charges of the local authority, the tenant had not that right. The proviso at the end of section 96 of the Act showed clearly that the section did not affect the tenant's covenant to pay the charges imposed by the local authority. The local authority could not have given the tenant a receipt for the rent, they could only give a receipt for the costs and expenses which they were entitled to demand, and which were paid to them in that way. There was nothing in section 96 which took away the landlord's right of distress. The result was that the rent remained due and the distress was lawful, and the defendants were entitled to judgment both on the claim and counterclaim.

The other Lords Justices concurred, and the appeal was accordingly allowed, with costs.

ACTION BY LOCAL AUTHORITY.

THE case of the Mayor, etc., of Ealing *v.* Gibbon came before Mr. Justice Kekewich, in the Chancery Division, this week—an action by the plaintiffs for an injunction to restrain the defendant from pulling down, removing, damaging, or otherwise interfering with a ventilating shaft.

Mr. Stewart Smith, K.C., and Mr. Bridges were counsel for the plaintiffs, and Mr. P. O. Lawrence, K.C., and Mr. Holt for the defendant.

The plaintiffs' case was that, at the centre of the junction of the four highways, Kentgardens, Victoria-road, Castlebar-hill, and Cleveland-road, Ealing, there stood a hollow iron shaft, about 11 ft. high, which communicated with, and formed part of, the public sewer. It was erected in its present position about twelve years ago by the then local authority. It had now become vested in the plaintiffs. In August, 1903, defendant wrote to the plaintiffs asking them to remove the shaft, he claiming the land on which it stood. Plaintiffs refused, and defendant then wrote that it was his intention to do so as the plaintiffs had refused. The writ in the action was then issued, and plaintiffs got an interim injunction to restrain the removal, pending the trial of the action. The plaintiffs said that it was the defendant's intention, unless restrained, to remove the shaft back, which, they said, would be a trespass upon their land and property, and would materially interfere with the necessary and proper ventilation of the sewer.

The defendant, by his defence, denied that he was committing any trespass in removing the shaft, and that the plaintiffs were the owners of the land, or that it was vested in them. He claimed the land and the right to remove the shaft.

After hearing evidence, his lordship found that the place in question was dedicated to the public in 1866, when the then local authority took the roads over. In his opinion, the plaintiffs had succeeded in the action, and he entered judgment for them.

Judgment accordingly.

CLAIM BY A DARLINGTON ARCHITECT.

AN action to recover the balance of an account, which totalled 17*l.* 18s., for professional services, was brought by G. W. Davis, architect, against W. J. Bloxham, draper, Blackwellgate, at the Darlington County Court on the 11th inst., before his Honour Judge Templer. The amount in dispute was 2*l.* 1s. 7d. The particulars, as briefly outlined by Mr. E. Wooler, who appeared for the plaintiff, were that Mr. Bloxham decided to build a small villa at Blackwell, and he employed Mr. Davis as his architect. The charge for the plans and superintendence of the building of the house agreed upon was at the rate of 2½ per cent. on the cost. The house cost 592*l.* The 2½ per cent. on that amount was not disputed by defendant. Mr. J. F. Latimer, who represented the defendant, said they objected to the item of 1*l.* for making a special survey of the site, and other charges for extras

incurred, measuring up extras and omissions. Commission was claimed with respect to the cost of an old fireplace which was removed from defendant's premises in Blackwellgate and used in the new house. Mr. Wooler said that, according to the usages of the profession, Mr. Davis was entitled to charge commission for such items. When defendant bought his site he wanted to be quite certain that he got the exact quantity of land, so he asked plaintiff to make a survey of it. Mr. Davis gave evidence in support of his case, and mentioned several extras that the defendant desired whilst the house was being erected. Mr. F. Martin, architect, gave evidence as to the practice of architects in similar cases, and said the 2½ per cent. would not include the survey of the site and the measuring up of additional work. Mr. Latimer submitted that the agreement between the parties was that the cost of the plans and the superintendence of the erection of the house was to be at the rate of 2½ per cent. on the cost of the house. His honour did not see why plaintiff should not have the cost of measuring up, which really was a safeguard in the interests of Mr. Latimer's client. His honour gave judgment for the plaintiff, with costs.—*Darlington Star.*

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

11,678 of 1903.—J. G. A. KITCHEN and L. P. PERKINS: *Manufacture of Tubular Radiators for Condensing, Cooling, and Heating Apparatus.*

A tubular radiator, consisting in the combination of a metallic coil, formed by lapping wire round a mandril of oblong section, with rounded ends of such size that, after withdrawal of the mandril, each two adjacent flat sides of the coil diverge from one another, and the rounded corners of each lap are set over relatively to the corners of the next lap, and a tube inserted into said coil.

13,289 of 1903.—G. G. BRODIE and J. D. PRIOR: *Fire-grate.*

This relates to fire-grates, and consists in providing the open front of the fire-grate with a double flap door or doors, that is, a door or doors, the parts of which are capable of folding on one another when the door or doors are in their position out of use.

14,987 of 1903.—R. BLUME: *Manufacture of a Varnish Substitute from Rosin Oil.*

The manufacture of a varnish substitute by preparing a mixture of non-drying vegetable or mineral oils with brewer's pitch, and then adding and incorporating rosin oil and driers with the mixture, and heating the mixture until the desired uniform consistency is obtained.

25,002 of 1903.—W. OMIT, T. OMIT, and W. OMIT, JUN.: *Combined Fire Door and Ventilator for Ranges.*

This invention relates to the construction of fire doors on ranges, by combining the door with a sliding ventilator so that the fire door need never be opened, unless for roasting; the supply of cold air to cause the fire to burn being regulated by means of the sliding ventilator.

177 of 1904.—T. B. SAMUEL: *Chimney Cowls.*

A device, consisting in the combination of a base portion, comprising two overlapping sections, depending flanges on the free edges of said sections, means for adjusting the sections, slotted clamping plates within the base, arranged perpendicular to the overlapping edges of the sections, slots in the opposite end flanges of the two sections, threaded rods in line with the said slots, and journalled in lugs projecting from said end flanges, and flanged taps upon said rod slidably disposed within the slots of the clamping plates.

6,952 of 1904.—A. MOLE: *Hanging of Window Sashes, and the like.*

Means for hanging window sashes, and the like, consisting in the combination of the cords, wires, or chains, connecting the two sashes, and passing over pulleys in the upper portion of the frame, and the means for adjusting said wires, cords, or chains, comprising long bolts or screws and nuts, fitted with loops for attachment to the ends of the cords, wires, or chains.

12,535 of 1903.—E. LANSING and E. F. BURCH: *Raising and Lowering Apparatus applicable for Fire-escapes, and other purposes.*

Apparatus for raising and lowering purposes, specially applicable for use as a fire-escape, consisting of a suitable frame carrying a drum, on which a rope is wound, mounted upon a fixed spindle, or the like, one end of a spring, placed in the interior of the drum, being attached to the fixed spindle, and the other end to the drum, so that the unwinding of the rope winds up the spring, and *vice-versâ*, a suitable governor being provided, driven by the rotation of the drum, to regulate the speed of rotation thereof as the rope upon it is unwound.

14,085 of 1903.—A. SCHULER: *Glass Plates for Facing Walls, and for like purposes.*

A glass plate for wall covering, and other mosaic decorations, characterised by the back surface of a glass plate, provided or not with painting or decoration, and having any desired shape or form, being covered by fusing with a layer of precious metal, and this, in turn, covered with a firmly-adhering cement layer, for the purpose of enabling the said plate to be permanently and securely fixed to its foundation.

6,654 of 1904.—O. H. SCHWARZ: *Walls and Partitions, and Slabs therefor.*

A slab or plate for use in building having chamfered corners and recessed edges, extending wholly or partly through the thickness thereof, and provided with inclined and crossed truss wires projecting at said corners and edges in such a manner that said plates can be directly connected to each other to form a wall or partition, the connected trusses forming a continuous trussed system with suspension means for taking the weight of the wall.

6,923 of 1904.—E. REINEKE: *Manufacture of Cement Asphalte Plates or Slabs.*

A process of manufacturing cement—or concrete—plates or slabs with an asphalte covering, consisting in pressing the asphalte coating upon the cement plate whose upper surface is provided with intersecting longitudinal and transverse grooves.

7,028 of 1904.—LEVIE FRERES (Société en nom Collectif): *A Process of Preparing and Burning Cement, and other Analogous Materials.*

A process of preparing and burning cement, or other materials treated in a similar manner, consisting of kneading, working up, grinding, or otherwise intimately mixing in the desired proportion, an inexpensive fuel such, for example, as poor or inferior coal dust, with the lime paste or limestone, or other material to be treated, to obtain an intimate mixture which, after drying, may be directly placed in the kiln without separate fuel.

7,231 of 1904.—F. G. S. HAM: *Traps, Gullies, and the like.*

This invention relates to that class of traps, gullies, and the like, in which a float or ball is employed to hold back the water in the event of an accumulation from the outlet side, and so prevent back flooding, and the object of the invention is to provide seatings for the ball valve and means of attachment for same to facilitate placing the seatings in position and renewal of same when required.

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

May 12.—By HUMBERT & FLINT (at Portsmouth).

Portsmouth, Hants.—"The Milton House Estate," 4 a. 1 r. 5 p., f.	£6,100
"The Milton Estate," including brickfield, 38 a. 3 r. 8 p., f.	23,000
Three freehold wharves, allotments, etc., area 9 a. 3 r. 35 p.	4,200

May 14.—By STEPHENSON & ALEXANDER (at Cardiff).

Mountain Ash, etc., Glamorgan.—The Abercwmboi Estate, area 259 acres, together with f.g. rents, 24*l.* 6s. 2d., "The Capoch Inn," fifteen houses, allotments, etc. (in one lot)	17,400

May 16.—By MARTEN & CARNABY.

Dulwich.—215 and 217, Clive-rd., u.t. 95½ yrs., g.r. 15*l.*, y.r. 78*l.*	590

By ALFRED RICHARDS.

Kingsland.—88, Buckingham-rd., u.t. 21 yrs., g.r. 4*l.* 10s., y.r. 36*l.*	205
Tottenham. — Springfield - rd., f.g. rents 39*l.* 10s., reversion in 65 yrs.	915

By THURGOOD & MARTIN.

Richmond.—35 and 37, Church-rd., u.t. 45½ yrs., g.r. 14*l.*, y.r. 90*l.*	600
43 to 49 (odd), Church-rd., u.t. 44½ yrs., g.r. 28*l.*, y.r. 183*l.*	1,200

By WEATHERALL & GREEN.

Minories.—Nos. 124 and 125 (s.), and 2 and 3, Vine-st., area 2,800 ft., Corporation lease, g.r. 16*l.* 8s. 10d., fine nil, y.r. 260*l.*	4,700

By ROGERS BROS. (at Peckham).

Peckham.—22, The Gardens, u.t. 71 yrs., g.r. 9*l.*, p.	325
12, Lyndhurst-gr., u.t. 62 yrs., g.r. 5*l.*, w.r. 36*l.* 8s.	230
22 and 26, Gowlett-rd., u.t., 64 yrs., g.r. 14*l.*, y.r. 58*l.*	630
35, Adys-rd., u.t. 70 yrs., g.r. 5*l.*, w.r. 45*l.* 10s.	295
Bermondsey.—60 and 62, Tranton-st., u.t. 29½ yrs., g.r. 7*l.*, w.r. 33*l.* 16s.	370
Dulwich.—351 and 353, Upland-rd., u.t. 75 yrs., g.r. 14*l.* 14s., e.r. 64*l.*	430

By WAINWRIGHTS & HEARD (at Frome).

Great Elm, Somerset.—The "Eagle Inn," and 0 a. 0 r. 31 p., f., y.r. 21*l.* 10s.	£1,000

May 17.—By CHINNOCK, GALSWORTHY & Co.

Berkeley, etc., Glos.—"Baynham Court Farm," 131 a. 3 r. 4 p., f., y.r. 210*l.* 16s. 10d.	4,300

By E. HILL CLARKE.

Streatham-hill.—Woodfield-av., "Atcombe," and 3¼ acres, u.t. 54 yrs., g.r. 80*l.* 14s., p.	1,400

By C. W. DAVIES & SON.

Holloway.—62, and 64, Andover-rd., u.t. 48yrs., g.r. 10*l.*, w.r. 78*l.*	440
Camden Town.—6 and 7, Pleasant-row, u.t. 33½ yrs., g.r. 15*l.*, w.r. 63*l.* 14s.	200

By DEBENHAM, TEWSON & Co.

Piccadilly.—Stafford-st., "Shelleys," f.g.r. 100*l.*, reversion in 64 yrs.	3,525
Hammersmith. — 191, King-st., (S.), f., y.r. 90*l.*	2,500
14 and 16, Elm-gr., u.t. 37 yrs., g.r., etc., 5*l.*, y.r. 56*l.*	505
2 and 4, Flora-gdns., u.t. 41¼ yrs., g.r. 4*l.*, w.r. 62*l.* 8s.	500

By MONTAGU HOLMES & SONS.

Commercial-road East.—19, 20, 22 to 26, 35 and 36, Ann-st., u.t. 38 yrs., g.r. 36*l.*, w.r. 280*l.* 16s.	1,525
Kingsland.—59 and 61, Hertford-road (s.), and 35 and 37, Downham-rd., u.t. 16 yrs., g.r. 7*l.* 10s., y.r. 122*l.* 8s.	585
39 to 45 (odd), Downham-rd., u.t. 15 yrs., g.r. 10*l.*, y.r. 136*l.*	615

By HUNTER & HUNTER.

Oxford-street.—Berwick-st., etc., f.g.r. 34*l.*, reversion in 35 yrs.	1,520
Chelsea.—45, Redesdale-st., u.t. 48 yrs., g.r. 2*l.*, y.r. 50*l.*	600
Holloway.—York-rd., i.g. rents 18*l.*, u.t. 38 yrs., g.r. nil	310
Fulham.—16, Cloncurry-st., u.t. 94½ yrs., g.r. 7*l.*, y.r. 42*l.*	475
Dulwich.—16 to 30 (even), Colwell-rd., u.t. 72½ yrs., g.r. 42*l.*, w.r. 209*l.* 6s.	1,600

By E. SIMPSON.

New Cross.—1, Monson-rd., u.t. 71 yrs., g.r. 3*l.* 3s., e.r. 39*l.*	325
Peckham.—79, Lausanne-rd., f., e.r. 36*l.*	400

By WESTON & SONS.

Brixton.—32, Claribel-rd., u.t. 10 yrs., g.r. 5*l.* 5s., y.r. 38*l.*	125
Stockwell.—24, Sidney-rd. (s.), u.t. 676 yrs., g.r. nil, y.r. 42*l.*	610
27, 29, 31, 33, and 35, Sidney-rd., u.t. 35 yrs., g.r. 22*l.* 10s., y.r. 170*l.*	1,585

By J. C. PLATT (at Hammersmith).

Hammersmith.—Upper Mall, "Clare Lodge," u.t. 72½ yrs., g.r. 12*l.* 10s., y.r. 45*l.*	500
Shepherd's Bush.—7 and 9, Davisville-rd., f., y.r. 60*l.*	930

By WEATHERALL & GREEN (at Leighton Buzzard).

Leighton Buzzard, Beds.—44 and 46, North-st. (The Golden Teapot Stores), and 10, 12, and 14, Lammas-st., f., y.r. 170*l.*	2,000

By ORGILL, MARKS, & LAWRENCE (at Masons' Hall Tavern).

City of London.—Queen Victoria-st., The "Black Friar" p.h., u.t. 50 yrs., y.r. 150*l.*, with goodwill	31,150

May 18.—By BAXTER, PAYNE, & LEPPER.

Bromley, Kent.—Edward-rd., "Glatney," f., e.r. 120*l.*	2,005
22, Bromley-common, f., e.r. 65*l.*	1,000

By FOSTER & CRANFIELD.

Blackfriars.—42, Stamford-st. (s.), f., y.r. 65*l.*	800

By MARTIN, WHITE, & Co.

Dulwich.—3, Elsie-rd., f., y.r. 36*l.*	525
Bermondsey.—18 and 20, Spa-rd., u.t. 12½ yrs., g.r. 6*l.*, w.r. 57*l.* 4s.	200
Dulwich.—126 and 128, Crystal Palace-rd., u.t. 61 yrs., g.r. 10*l.*, w.r. 75*l.* 8s.	500

By ERNEST OWERS.

Hampstead.—24, Gladys-rd., u.t. 86 yrs., g.r. 10*l.*, e.r. 65*l.*	500

By E. & S. SMITH.

Clerkenwell.—Wilmington-sq., i.g. rents 43*l.*, u.t. 11½ yrs., g.r. 8*l.*	200
Camden Town.—11, Prebend-st., u.t. 17½ yrs., g.r. nil, y.r. 52*l.*	200
Muswell Hill.—36, Muswell-av., u.t. 93 yrs., g.r. 11*l.* 11s., e.r. 65*l.*	650

By R. TIDEY & SON.

Forest Gate.—Huddleston-rd., f.g.r. 9*l.*, reversion in 78 yrs.	235
Hornsey.—64 and 68, Linzee-rd, f., y.r. 76*l.*	890
Wood Green.—1 and 2, Braemar-villas, f., y.r. 70*l.*	890

By DOUGLAS YOUNG & Co.

Enfield.—Bush Hill Pk., 30, 32, 36, 40, and 64, Wellington-rd., u.t. 85 yrs., g.r. 52*l.*, y.r. 312*l.*	2,900
42, Lincoln-rd., u.t. 85 yrs., g.r. 11*l.*, y.r. 68*l.*	700
4, Queen Anne's-pl., u.t. 85 yrs., g.r. 10*l.*, y.r. 60*l.*	500
3, Queen Anne's-gdns., u.t. 85 yrs., g.r. 8*l.*, y.r. 52*l.*	520
1 to 81 (odd), 2 to 80 (even), Fifth-av., 1 to 21 (odd), 4 to 76 (even), Sixth-av., u.t. 85 yrs., g.r. 326*l.*, y.r. 2,286*l.* 8s.	11,100
27, First-av., u.t. 85 yrs., g.r. 5*l.*, y.r. 37*l.* 1s.	225

By MADDISON, MILES & MADDISON (at Yarmouth).

Burgh St. Margaret, Norfolk.—A freehold holding, three freehold marshes, 6 a. 9 r. 23 p.	315
11 a. 0 r. 38 p.	670
Potter Heigham, Norfolk.—Two freehold marshes, 12 a. 3 r. 12 p.	140
West Somerton, Norfolk.—Freehold cottage and gdns.	150
Caister, Norfolk.—A freehold rent charge of 5*l.* 10s.	125

By WYATT & SON (at Chichester).

Chichester, Sussex.—14, Orchard-st., f.	105
Bosham, Sussex.—A copyhold house and tenements, y.r. 26*l.*	410

Another advantageous feature of the stone is that lamination planes appear to be entirely absent, a fact apparently attributable to the small proportion of mica present. Chemical analysis shows an entire absence of lime, and that nearly the whole of the iron present is in the stable form of ferric oxide. To the latter circumstance may be attributed the durability of colour distinguishing this stone. The Closeburn quarries are now equipped with modern stoneworking plant for the purpose of preparing selected stones while the material is still soft and filled with "quarry water," which, being brought to the surface and evaporated, leaves behind an indurating skin or crust protecting the surface from hostile influences. Although extensively used in Scotland and the North of England, this stone is but little known in London, the only building where it may be inspected, so far as we are aware, being the infant schools, in Railway-street, Barnes.

CAPITAL AND LABOUR.

A SCHEME TO AVOID STRIKES IN THE BUILDING TRADE.—At the North-Eastern Hotel, York, a conference took place recently (as we mentioned in our last week's issue) between ten representatives of the Yorkshire Federation of Building Trades Employers and a similar number of representatives from the headquarters of operatives' organisations, for the purpose of discussing the question of closer union between masters and men "upon a broad principle of equity." The following scheme, which had already been discussed and approved by the master builders' associations in Yorkshire, was mutually agreed to, and a resolution passed that it be referred to the respective national associations in the hope that it would find general adoption:—(1) That local committees shall be appointed in all districts where labour is sufficiently represented to warrant the formation of such a committee, by both masters and men, for the purpose of dealing with questions in dispute of a minor character, and also with questions of greater importance in the initial stages of the grievance, with a view to settling disputes locally. The minutes of the proceedings shall be taken by each secretary. (2) That a county conciliation board shall also be instituted, which shall be elected annually, and shall consist of two representatives from each section of building trades of operatives, of the one part, and a like number of representatives of the Yorkshire Federation of Building Trade Employers of the other part, whose duties shall be to consider any question upon appeal from the local committee. (3) It shall be competent for the local committees to hold meetings, but time to be occupied shall not be more than fourteen days from date of notice from either side on any case brought under its notice, and, if a satisfactory settlement cannot be arrived at within the month, it shall be the duty of the secretaries of the local committees to notify either side to the other that notice must be given to the county conciliation board within ten days to convene a meeting, for the purpose of hearing the appeal from the local committees as early as possible. The minutes of the local committees, together with the chairman's report, must also be submitted to the county board. (4) Should the county conciliation board be unable to agree after all matters, minutes, and correspondence in reference to the question at issue shall have been openly and freely discussed (at one meeting only), and the questions in dispute shall not have been settled, then it shall be competent for either side, within seven days after such sitting of the board, to appeal to the Board of Trade to appoint a referee or arbitrator, whose decision shall be final and binding on all parties, and the cost incurred thereby shall be borne equally between operatives and employers. (5) It shall be clearly and distinctly defined that, pending the settlement of any dispute or alteration of rules, in passing through the various stages, no stoppage of work shall be allowed under any pretext whatever.

Legal.

WORKMAN'S CLAIM FOR DAMAGES AGAINST EMPLOYER.

THE case of Rouse *v.* Dixon came before a Divisional Court of King's Bench, composed of the Lord Chief Justice and Justices Wills and Kennedy, on the 19th inst. on the appeal of the plaintiff from the decision of the County Court Judge of Croydon.

The facts were these:—The plaintiff, a workman in the employment of the defendant, on September 8, 1903, sustained personal injuries in the course of his employment during some building operations. On September 30 the plaintiff gave the defendant notice of the injury, and on October 14, made a final request for arbitration under the Workmen's Compensation Act, 1897. Defendant filed an answer that plaintiff was not entitled to compensation under the Act, as the building on which the accident happened was under 30 ft. high. The plaintiff then gave defendant notice of abandonment of his claim for compensation under the Act, and the matter, not being proceeded with, defendant was awarded the costs incurred in respect thereof. On January 21 plaintiff started an action for damages in respect of the same injuries under the Employers' Liability Act, 1880. When that action came on for hearing in the Croydon County Court, defendant took the preliminary objection that, plaintiff having made a request for arbitration under the Workmen's Compensation Act, and had exercised his option under section 1, sub-section 2, his action under the Employers' Liability Act was barred. The County Court Judge adopted this view, and gave judgment for the defendant without hearing the case on its merits. Hence the present appeal of the plaintiff.

At the conclusion of the arguments of counsel, the Lord Chief Justice, in giving judgment, said that a workman was only debarred from taking alternative proceedings where he had exercised an effective option, and, in his opinion, when the workman had acquiesced in a preliminary objection to proceedings which he had, by mistake, commenced, and had been ordered to pay the costs of those proceedings, he was not debarred from bringing an action to obtain damages under the Employers' Liability Act. He thought the appeal must be allowed, and the case remitted to the County Court to be heard on its merits.

Justices Wills and Kennedy concurred.

Mr. Broxholm appeared for the appellant, and Mr. Griffith Jones for the respondent.

POINT UNDER THE METROPOLIS LOCAL MANAGEMENT ACT.

THE case of Skinner *v.* Hunt and others came before the Court of Appeal, composed of Lords Justices Vaughan Williams, Stirling, and Cozens-Hardy, on the 20th inst., on the application of the defendants for judgment or new trial on appeal from verdict and judgment at trial before Mr. Justice Ridley and a common jury in the King's Bench Division.

In this case the plaintiff claimed damages against the defendant for alleged wrongful distress, the defendants counterclaiming against the plaintiff for two quarters' rent. The case was tried before Mr. Justice Ridley and a common jury, and the jury awarded the plaintiff 50*l.* damages on the claim. The case was then argued before his lordship on a point of law arising on the admitted facts under section 96 of The Metropolis Local Management Act, 1862. The admitted facts were these:—The plaintiff was the tenant and occupier of a shop, under a lease from one, Budd, for a term of twenty-one years, at the rent of 40*l.* per annum, being payable quarterly. The lease contained a covenant by the lessee that he was to pay all rates, taxes, and assessments whatsoever, and all charges imposed by any local authority upon the frontages in respect of the taking over the roads and footpaths abutting upon the demised premises, or the making or repair thereof.

On February 22, 1900, plaintiff received notice that defendants had been appointed receivers of the rents of his premises, and that he was to pay his rent to them. On December 18, 1902, the plaintiff had a notice served upon him from the Wandsworth Borough Council not to pay his rent without first deducting 34*l.* 19s. 2d., due to the Council under an apportionment of the estimated cost of paving the roads and footpaths. On January 20, 1903, the plaintiff paid the Council 10*l.*, the quarter's rent due from him at Christmas, 1902, and informed the defendants of the fact. On January 22, 1903, the defendants demanded payment from the plaintiff of the rent due from him on December 25, 1902, which the plaintiff did not pay, and on February 12, 1903, defendants levied a distress upon the plaintiff's premises, and then the plaintiff brought the present action. On behalf of the defendants it was contended that, by the terms of the covenant, the plaintiff had entered into in his lease, he could not deduct what he had to pay out of his rent, and that, as he had not paid his rent to them, the distress was lawful.

On behalf of the plaintiff it was contended that the charge for paving was, by The Metropolis Management Act, 1862, imposed upon the owner, as it was an improvement of his property, and that the Council were going to take from the tenant what the landlord owed, and that therefore the distress was illegal. Mr. Justice Ridley held that, in the circumstances of the case, the right to distrain had gone, and that there must be judgment for the plaintiff for the 50*l.* damages on the claim, with costs, and also for the plaintiff on the counterclaim, with costs. Hence the present appeal of the defendants.

Mr. J. A. Hawke appeared for the appellants; and Mr. Lushington and Mr. Tindal Atkinson for the respondent.

At the conclusion of the arguments of counsel Lord Justice Vaughan Williams, in giving judgment, said that the question was whether, at the moment when the distress was levied, any rent was due for which the landlord could distrain. If the rent was due there was nothing wrong in the distress; if it was not due the distress was wrongful. The real question was whether the tenant, having regard to the terms of his lease, had a right to deduct, or set off, this payment when he was called on to pay the rent. On the terms of the lease it was clear that, if it was a payment of the charges of the local authority, the tenant had not that right. The proviso at the end of section 96 of the Act showed clearly that the section did not affect the tenant's covenant to pay the charges imposed by the local authority. The local authority could not have given the tenant a receipt for the rent, they could only give a receipt for the costs and expenses which they were entitled to demand, and which were paid to them in that way. There was nothing in section 96 which took away the landlord's right of distress. The result was that the rent remained due and the distress was lawful, and the defendants were entitled to judgment both on the claim and counterclaim.

The other Lords Justices concurred, and the appeal was accordingly allowed, with costs.

ACTION BY LOCAL AUTHORITY.

THE case of the Mayor, etc., of Ealing *v.* Gibbon came before Mr. Justice Kekewich, in the Chancery Division, this week—an action by the plaintiffs for an injunction to restrain the defendant from pulling down, removing, damaging, or otherwise interfering with a ventilating shaft.

Mr. Stewart Smith, K.C., and Mr. Bridges were counsel for the plaintiffs, and Mr. P. O. Lawrence, K.C., and Mr. Holt for the defendant.

The plaintiffs' case was that, at the centre of the junction of the four highways, Kentgardens, Victoria-road, Castlebar-hill, and Cleveland-road, Ealing, there stood a hollow iron shaft, about 11 ft. high, which communicated with, and formed part of, the public sewer. It was erected in its present position about twelve years ago by the then local authority. It had now become vested in the plaintiffs. In August, 1903, defendant wrote to the plaintiffs asking them to remove the shaft, he claiming the land on which it stood. Plaintiffs refused, and defendant then wrote that it was his intention to do so as the plaintiffs had refused. The writ in the action was then issued, and plaintiffs got an interim injunction to restrain the removal, pending the trial of the action. The plaintiffs said that it was the defendant's intention, unless restrained, to remove the shaft back, which, they said, would be a trespass upon their land and property, and would materially interfere with the necessary and proper ventilation of the sewer.

The defendant, by his defence, denied that he was committing any trespass in removing the shaft, and that the plaintiffs were the owners of the land, or that it was vested in them. He claimed the land and the right to remove the shaft.

After hearing evidence, his lordship found that the place in question was dedicated to the public in 1866, when the then local authority took the roads over. In his opinion, the plaintiffs had succeeded in the action, and he entered judgment for them.

Judgment accordingly.

CLAIM BY A DARLINGTON ARCHITECT.

AN action to recover the balance of an account, which totalled 17*l.* 18s., for professional services, was brought by G. W. Davis, architect, against W. J. Bloxham, draper, Blackwellgate, at the Darlington County Court on the 11th inst., before his Honour Judge Templer. The amount in dispute was 2*l.* 1s. 7d. The particulars, as briefly outlined by Mr. E. Wooler, who appeared for the plaintiff, were that Mr. Bloxham decided to build a small villa at Blackwell, and he employed Mr. Davis as his architect. The charge for the plans and superintendence of the building of the house agreed upon was at the rate of 2½ per cent. on the cost. The house cost 592*l.* The 2½ per cent. on that amount was not disputed by defendant. Mr. J. F. Latimer, who represented the defendant, said they objected to the item of 1*l.* for making a special survey of the site, and other charges for extras

incurred, measuring up extras and omissions. Commission was claimed with respect to the cost of an old fireplace which was removed from defendant's premises in Blackwellgate and used in the new house. Mr. Wooler said that, according to the usages of the profession, Mr. Davis was entitled to charge commission for such items. When defendant bought his site he wanted to be quite certain that he got the exact quantity of land, so he asked plaintiff to make a survey of it. Mr. Davis gave evidence in support of his case, and mentioned several extras that the defendant desired whilst the house was being erected. Mr. F. Martin, architect, gave evidence as to the practice of architects in similar cases, and said the 2½ per cent. would not include the survey of the site and the measuring up of additional work. Mr. Latimer submitted that the agreement between the parties was that the cost of the plans and the superintendence of the erection of the house was to be at the rate of 2½ per cent. on the cost of the house. His honour did not see why plaintiff should not have the cost of measuring up, which really was a safeguard in the interests of Mr. Latimer's client. His honour gave judgment for the plaintiff, with costs.—*Darlington Star.*

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

11,678 of 1903.—J. G. A. KITCHEN and L. P. PERKINS: *Manufacture of Tubular Radiators for Condensing, Cooling, and Heating Apparatus.*

A tubular radiator, consisting in the combination of a metallic coil, formed by lapping wire round a mandril of oblong section, with rounded ends of such size that, after withdrawal of the mandril, each two adjacent flat sides of the coil diverge from one another, and the rounded corners of each lap are set over relatively to the corners of the next lap, and a tube inserted into said coil.

13,289 of 1903.—G. G. BRODIE and J. D. PRIOR: *Fire-grate.*

This relates to fire-grates, and consists in providing the open front of the fire-grate with a double flap door or doors, that is, a door or doors, the parts of which are capable of folding on one another when the door or doors are in their position out of use.

14,987 of 1903.—R. BLUME: *Manufacture of a Varnish Substitute from Rosin Oil.*

The manufacture of a varnish substitute by preparing a mixture of non-drying vegetable or mineral oils with brewer's pitch, and then adding and incorporating rosin oil and driers with the mixture, and heating the mixture until the desired uniform consistency is obtained.

25,002 of 1903.—W. OMIT, T. OMIT, and W. OMIT, JUN.: *Combined Fire Door and Ventilator for Ranges.*

This invention relates to the construction of fire doors on ranges, by combining the door with a sliding ventilator so that the fire door need never be opened, unless for roasting; the supply of cold air to cause the fire to burn being regulated by means of the sliding ventilator.

177 of 1904.—T. B. SAMUEL: *Chimney Cowls.*

A device, consisting in the combination of a base portion, comprising two overlapping sections, depending flanges on the free edges of said sections, means for adjusting the sections, slotted clamping plates within the base, arranged perpendicular to the overlapping edges of the sections, slots in the opposite end flanges of the two sections, threaded rods in line with the said slots, and journalled in lugs projecting from said end flanges, and flanged taps upon said rod slidably disposed within the slots of the clamping plates.

6,952 of 1904.—A. MOLE: *Hanging of Window Sashes, and the like.*

Means for hanging window sashes, and the like, consisting in the combination of the cords, wires, or chains, connecting the two sashes, and passing over pulleys in the upper portion of the frame, and the means for adjusting said wires, cords, or chains, comprising long bolts or screws and nuts, fitted with loops for attachment to the ends of the cords, wires, or chains.

12,535 of 1903.—E. LANSING and E. F. BURCH: *Raising and Lowering Apparatus applicable for Fire-escapes, and other purposes.*

Apparatus for raising and lowering purposes, specially applicable for use as a fire-escape, consisting of a suitable frame carrying a drum, on which a rope is wound, mounted upon a fixed spindle, or the like, one end of a spring, placed in the interior of the drum, being attached to the fixed spindle, and the other end to the drum, so that the unwinding of the rope winds up the spring, and *vice-versâ*, a suitable governor being provided, driven by the rotation of the drum, to regulate the speed of rotation thereof as the rope upon it is unwound.

14,085 of 1903.—A. SCHULER: *Glass Plates for Facing Walls, and for like purposes.*

A glass plate for wall covering, and other mosaic decorations, characterised by the back surface of a glass plate, provided or not with painting or decoration, and having any desired shape or form, being covered by fusing with a layer of precious metal, and this, in turn, covered with a firmly-adhering cement layer, for the purpose of enabling the said plate to be permanently and securely fixed to its foundation.

6,654 of 1904.—O. H. SCHWARZ: *Walls and Partitions, and Slabs therefor.*

A slab or plate for use in building having chamfered corners and recessed edges, extending wholly or partly through the thickness thereof, and provided with inclined and crossed truss wires projecting at said corners and edges in such a manner that said plates can be directly connected to each other to form a wall or partition, the connected trusses forming a continuous trussed system with suspension means for taking the weight of the wall.

6,923 of 1904.—E. REINEKE: *Manufacture of Cement Asphalte Plates or Slabs.*

A process of manufacturing cement—or concrete—plates or slabs with an asphalte covering, consisting in pressing the asphalte coating upon the cement plate whose upper surface is provided with intersecting longitudinal and transverse grooves.

7,028 of 1904.—LEVIE FRERES (Société en nom Collectif): *A Process of Preparing and Burning Cement, and other Analogous Materials.*

A process of preparing and burning cement, or other materials treated in a similar manner, consisting of kneading, working up, grinding, or otherwise intimately mixing in the desired proportion, an inexpensive fuel such, for example, as poor or inferior coal dust, with the lime paste or limestone, or other material to be treated, to obtain an intimate mixture which, after drying, may be directly placed in the kiln without separate fuel.

7,231 of 1904.—F. G. S. HAM: *Traps, Gullies, and the like.*

This invention relates to that class of traps, gullies, and the like, in which a float or ball is employed to hold back the water in the event of an accumulation from the outlet side, and so prevent back flooding, and the object of the invention is to provide seatings for the ball valve and means of attachment for same to facilitate placing the seatings in position and renewal of same when required.

*All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

May 12.—By HUMBERT & FLINT (at Portsmouth).

Portsmouth, Hants.—"The Milton House Estate," 4 a. 1 r. 5 p., f.	£6,100
"The Milton Estate," including brickfield, 38 a. 3 r. 8 p., f.	23,000
Three freehold wharves, allotments, etc., area 9 a. 3 r. 35 p.	4,200

May 14.—By STEPHENSON & ALEXANDER (at Cardiff).

Mountain Ash, etc., Glamorgan.—The Abercwmboi Estate, area 259 acres, together with f.g. rents, 24*l.* 6s. 2d., "The Capoch Inn," fifteen houses, allotments, etc. (in one lot)	17,400

May 16.—By MARTEN & CARNABY.

Dulwich.—215 and 217, Clive-rd., u.t. 95½ yrs., g.r. 15*l.*, y.r. 78*l.*	590

By ALFRED RICHARDS.

Kingsland.—88, Buckingham-rd., u.t. 21 yrs., g.r. 4*l.* 10s., y.r. 36*l.*	205
Tottenham. — Springfield-rd., f.g. rents 39*l.* 10s., reversion in 65 yrs.	915

By THURGOOD & MARTIN.

Richmond.—35 and 37, Church-rd., u.t. 45½ yrs., g.r. 14*l.*, y.r. 90*l.*	600
43 to 49 (odd), Church-rd., u.t. 44½ yrs., g.r. 28*l.*, y.r. 183*l.*	1,200

By WEATHERALL & GREEN.

Minories.—Nos. 124 and 125 (s.), and 2 and 3, Vine-st., area 2,800 ft., Corporation lease, g.r. 16*l.* 8s. 10d., fine nil, y.r. 260*l.*	4,700

By ROGERS BROS. (at Peckham).

Peckham.—22, The Gardens, u.t. 71 yrs., g.r. 9*l.*, p.	325
12, Lyndhurst-gr., u.t. 62 yrs., g.r. 5*l.*, w.r. 36*l.* 8s.	230
22 and 26, Gowlett-rd., u.t., 64 yrs., g.r. 14*l.*, y.r. 58*l.*	630
35, Adys-rd., u.t. 70 yrs., g.r. 5*l.*, w.r. 45*l.* 10s.	295
Bermondsey.—60 and 62, Tranton-st., u.t. 29½ yrs., g.r. 7*l.*, w.r. 33*l.* 16s.	370
Dulwich.—351 and 353, Upland-rd., u.t. 75 yrs., g.r. 14*l.* 14s., e.r. 64*l.*	430

By WAINWRIGHTS & HEARD (at Frome).

Great Elm, Somerset.—The "Eagle Inn," and 0 a. 0 r. 31 p., f., y.r. 21*l.* 10s.	£1,000

May 17.—By CHINNOCK, GALSWORTHY & Co.

Berkeley, etc., Glos.—"Baynham Court Farm," 131 a. 3 r. 4 p., f., y.r. 210*l.* 16s. 10d.	4,300

By E. HILL CLARKE.

Streatham-hill.—Woodfield-av., "Atcombe," and 3¼ acres, u.t. 54 yrs., g.r. 80*l.* 14s., p.	1,400

By C. W. DAVIES & SON.

Holloway.—62, and 64, Andover-rd., u.t. 48yrs., g.r. 10*l.*, w.r. 78*l.*	440
Camden Town.—6 and 7, Pleasant-row, u.t. 33½ yrs., g.r. 15*l.*, w.r. 63*l.* 14s.	200

By DEBENHAM, TEWSON & Co.

Piccadilly.—Stafford-st., "Shelleys," f.g.r. 100*l.*, reversion in 64 yrs.	3,525
Hammersmith. — 191, King-st., (S.), f., y.r. 90*l.*	2,500
14 and 16, Elm-gr., u.t. 37 yrs., g.r., etc., 5*l.*, y.r. 56*l.*	505
2 and 4, Flora-gdns., u.t. 41¼ yrs., g.r. 4*l.*, w.r. 62*l.* 8s.	500

By MONTAGU HOLMES & SONS.

Commercial-road East.—19, 20, 22 to 26, 35 and 36, Ann-st., u.t. 38 yrs., g.r. 36*l.*, w.r. 280*l.* 16s.	1,525
Kingsland.—59 and 61, Hertford-road (s.), and 35 and 37, Downham-rd., u.t. 16 yrs., g.r. 7*l.* 10s., y.r. 122*l.* 8s.	585
39 to 45 (odd), Downham-rd., u.t. 15 yrs., g.r. 10*l.*, y.r. 136*l.*	615

By HUNTER & HUNTER.

Oxford-street.—Berwick-st., etc., f.g.r. 34*l.*, reversion in 35 yrs.	1,520
Chelsea.—45, Redesdale-st., u.t. 48 yrs., g.r. 2*l.*, y.r. 50*l.*	600
Holloway.—York-rd., l.g. rents 18*l.*, u.t. 38 yrs., g.r. nil	310
Fulham.—16, Cloncurry-st., u.t. 94½ yrs., g.r. 7*l.*, y.r. 42*l.*	475
Dulwich.—16 to 30 (even), Colwell-rd., u.t. 72½ yrs., g.r. 42*l.*, w.r. 209*l.* 6s.	1,600

By E. SIMPSON.

New Cross.—1, Monson-rd., u.t. 71 yrs., g.r. 3*l.* 3s., e.r. 39*l.*	325
Peckham.—79, Lausanne-rd., f., e.r. 36*l.*	400

By WESTON & SONS.

Brixton.—32, Claribel-rd., u.t. 10 yrs., g.r. 5*l.* 5s., y.r. 38*l.*	125
Stockwell.—24, Sidney-rd. (s.), u.t. 676 yrs., g.r. nil, y.r. 42*l.*	610
27, 29, 31, 33, and 35, Sidney-rd., u.t. 35 yrs., g.r. 22*l.* 10s., y.r. 170*l.*	1,585

By J. C. PLATT (at Hammersmith).

Hammersmith.—Upper Mall, "Clare Lodge," u.t. 72½ yrs., g.r. 12*l.* 10s., y.r. 45*l.*	500
Shepherd's Bush.—7 and 9, Davisville-rd., f., y.r. 60*l.*	930

By WEATHERALL & GREEN (at Leighton Buzzard).

Leighton Buzzard, Beds.—44 and 46, North-st. (The Golden Teapot Stores), and 10, 12, and 14, Lammas-st., f., y.r. 170*l.*	2,000

By ORGILL, MARKS, & LAWRENCE (at Masons' Hall Tavern).

City of London.—Queen Victoria-st., The "Black Friar" p.h., u.t. 50 yrs., y.r. 150*l.*, with goodwill	31,150

May 18.—By BAXTER, PAYNE, & LEPPER.

Bromley, Kent.—Edward-rd., "Glatney," f., e.r. 120*l.*	2,005
22, Bromley-common, f., e.r. 65*l.*	1,000

By FOSTER & CRANFIELD.

Blackfriars.—42, Stamford-st. (s.), f., y.r. 65*l.*	800

By MARTIN, WHITE, & Co.

Dulwich.—3, Elsie-rd., f., y.r. 36*l.*	525
Bermondsey.—18 and 20, Spa-rd., u.t. 12½ yrs., g.r. 6*l.*, w.r. 57*l.* 4s.	200
Dulwich.—126 and 128, Crystal Palace-rd., u.t. 61 yrs., g.r. 10*l.*, w.r. 75*l.* 8s.	590

By ERNEST OWERS.

Hampstead.—24, Gladys-rd., u.t. 86 yrs., g.r. 10*l.*, e.r. 65*l.*	500

By E. & S. SMITH.

Clerkenwell.—Wilmington-sq., i.g. rents 43*l.*, u.t. 11½ yrs., g.r. 8*l.*	200
Camden Town.—11, Prebend-st., u.t. 17½ yrs., g.r. nil, y.r. 52*l.*	200
Muswell Hill.—36, Muswell-av., u.t. 93 yrs., g.r. 11*l.* 11s., e.r. 65*l.*	650

By R. TIDEY & SON.

Forest Gate.—Huddleston-rd., f.g.r. 9*l.*, reversion in 78 yrs.	235
Hornsey.—64 and 68, Linzee-rd, f., y.r. 76*l.*	890
Wood Green.—1 and 2, Braemar-villas, f., y.r. 70*l.*	890

By DOUGLAS YOUNG & Co.

Enfield.—Bush Hill Pk., 30, 32, 36, 40, and 64, Wellington-rd., u.t. 85 yrs., g.r. 52*l.*, y.r. 312*l.*	2,900
42, Lincoln-rd., u.t. 85 yrs., g.r. 11*l.*, y.r. 68*l.*	700
4, Queen Anne's-pl., u.t. 85 yrs., g.r. 10*l.*, y.r. 60*l.*	500
3, Queen Anne's-gdns., u.t. 85 yrs., g.r. 8*l.*, y.r. 52*l.*	520
1 to 81 (odd), 2 to 80 (even), Fifth-av., 1 to 21 (odd), 4 to 76 (even), Sixth-av., u.t. 85 yrs., g.r. 326*l.*, y.r. 2,286*l.* 8s.	11,100
27, First-av., u.t. 85 yrs., g.r. 5*l.*, y.r. 37*l.* 1s.	225

By MADDISON, MILES & MADDISON (at Yarmouth).

Burgh St. Margaret, Norfolk.—A freehold holding, three freehold marshes, 6 a. 0 r. 23 p.	315
11 a. 0 r. 38 p.	670
Potter Heigham, Norfolk.—Two freehold marshes, 12 a. 3 r. 12 p.	140
West Somerton, Norfolk.—Freehold cottage and gdns.	150
Caister, Norfolk.—A freehold rent charge of 5*l.* 10s.	125

By WYATT & SON (at Chichester).

Chichester, Sussex.—14, Orchard-st., f.	105
Bosham, Sussex.—A copyhold house and tenements, y.r. 26*l.*	410

May 19.—By AUSTIN & AUSTIN.

Leytonstone.—53, Forest Drive West, f., y.r. 40*l.* £560
Kilburn. — 109, Iverson-rd., u.t. 78 yrs., g.r. 7*l.*, y.r. 42*l.* 500
33 and 34, Palmerston-rd., u.t. 60 yrs., g.r. 17*l.* 8s., y.r. 135*l.* 4s. 600
47, Donaldson-rd., u.t. 88 yrs., g.r. 6*l.*, e.r. 40*l.* 380

By BOWDITCH & GRANT.

Caterham, Surrey.—Elgin-cres., "Elgin Villa" and 0 a. 2 r. 28 p., f., p. 800

By BRODIE, TIMBS, & CO.

Highgate.—North-hill, "Gothic Cottage," c., y.r. 28*l.* 700

By CHAS. CANEY.

Brockley.—301, Brockley-rd. (s.), u.t. 58 yrs., g.r. 12*l.* 10s., y.r. 60*l.* 790

By PHILLIPS & HALL.

Bermondsey.—139 and 141, Lynton-rd., u.t. 36½ yrs., g.r. 10*l.*, y.r. 70*l.* 4s. 450

By BLISS & SONS.

Edgware-road.—(Nos. 500, 508, and 510), i.g.r. 40*l.* 10s., u.t. 19 yrs., g.r. 2*l.* 6s. 6d. Whitechapel.—76, Whitechapel-rd. (s.), u.t. 180 yrs., g.r. nil, w.r. 44*l.* 4s. 400
83, King Edward-rd., u.t. 35 yrs., g.r. 1*l.*, e.r. 45*l.* 370
Old Ford.—82 and 84, Ellesmere-rd., f., w.r. 70*l.* 4s. 370
Ellesmere-rd. f.g.r. 6*l.*, reversion in 52½ yrs. 780
374 and 376, Old Ford-rd., f., w.r. 72*l.* 16s. 155
Old Ford-rd., f.g.r. 6*l.* 6s., reversion in 55 yrs. 360
Caterham, Surrey.—Croydon-rd., 10 plots of building land, f. 165
625

By NEWBON, EDWARDS, & SHEPHARD.

Tottenham.—Lansdowne-rd., two plots of building land, f. 165
Antil-rd., eight plots of building land, f. .. 480
Broad-la., ten plots of building land, f. 560
Bloomsbury.—55, Gloucester-st. (s), f., e.r. 85*l.* 1,420
Lambeth.—9 to 14, Ward-st., u.t. 5½ yrs., g.r. 25*l.* 4s., y.r. 122*l.* 200
Bayswater.—3, Sutherland-pl., u.t. 42 yrs., g.r. 6*l.*, e.r. 45*l.* 495
Canonbury.—32, Spencer-st., u.t. 14½ yrs., g.r. 6*l.*, e.r. 38*l.* 125

By STIMSON & SONS.

Rotherhithe. — Reculver-rd., i.g. rents 15*l.*, reversion in 53 yrs. 389
Dulwich.—Wood-vale, etc., i.g. rents 96*l.*, reversion in 78 yrs. 2,700
Mile End.—2 and 4, Cleveland-st., u.t. 16 yrs., g.r. 12*l.*, y.r. 75*l.* 10s. 250
Old Kent-road.—Dartnell-rd., f.g rents 66*l.*, reversion in 77 yrs. 1,400
Dulwich.—196, 198, 204, and 206, Barry-rd., u.t. 75 yrs., g.r. 28*l.*, y.r. 126*l.* 1,110
Brixton.—54 to 74 (even), Millbrook-rd. (including the Millbrook Laundry), u.t. 17¾ yrs., g.r. 46*l.* 4s., w.r. 389*l.* 2s. 1,720
Catford.—54, 56, and 58, Faversham-rd., f., y.r. 85*l.* 1,005
Camberwell.—34 to 40 (even), Lothian-rd., u.t. 53 yrs., g.r. 16*l.*, w.r. 137*l.* 10s. 1,010

By J. A. & W. THARP.

Willesden.—11, Dean-rd., u.t. 76 yrs., g.r. 8*l.*, e.r. 55*l.* 410
Ilford, Essex.—Sylvan-rd., "Beulah Villa" and "Myrtle Cottage," f., w.r. 49*l.* 8s. .. 560
Tyne-rd., "Alpha Villa," f., w.r. 23*l.* 8s. .. 225

By BRIDGMAN & SON (at Hoddesdon).

Hoddesdon, Herts.—Lord-st., plot of building land, f. 115
Stanstead-rd., freehold building land, 1 a. 2 r. 0 p. 145
Stanstead-rd., two enclosures of arable, 7 a. 2 r. 0 p., f. 700
Admiral's Walk, enclosure of meadow, 4 a. 0 r. 36 p., f. 300
Lord-street, "Sydney Lodge," f., p. 800

By WHEELER & SON (at Sudbury)

Newton, Suffolk.—"Roger's Farm," 106 a. 1 r. 5 p., f. and c. 615

By WHEATLEY & SCRIVEN (at Masons' Hall Tavern).

Hampstead. — North-end, the "Hare and Hounds" p.-h., u.t. 24½ yrs., y.r. 100*l.*, with goodwill 2,320

May 20.—By F. G. BOWEN.

South Ockendon, Essex.—"Pear Tree House" and six cottages adjoining, f. 1,200
Mitcham.—Church-rd., a freehold plot of land 190

By DAVID J. CHATTELL.

Portman Square.—17, Bryanston-st., u.t. 8½ yrs., g.r. 40*l.*, y.r. 200*l.* 650
Woolwich, Kent. — Rodney-st., freehold wharf and premises, p. 290

By HORNBLOWER & FLOWER.

Croydon.—20 and 22, Whitehorse-rd., f. y.r. 84*l.* 1,160
Thornton Heath.—56 to 68, Princess-rd., u.t. 76 yrs., g.r. 40*l.*, w.r. 218*l.* 8s. 1,470
149 to 159 (odd), Moffatt-rd., u.t. 73 yrs., g.r. 24*l.*, w.r. 140*l.* 8s. 650

By G. PEARCE & SONS.

Hoxton.—64, Alma-st., u.t. 30¼ yrs., g.r. 5*l.*, y.r. 32*l.* 315
Stoke Newington.—26 and 39, Barrett's-gr., u.t. 70 yrs., g.r. 15*l.* 10s., y.r. 74*l.* 740
Hoxton.—59, Grange-st., u.t. 32 yrs., g.r. 5*l.* 5s., y.r. 36*l.* 310
Manor Park.—1, Sheridan-rd., u.t. 93 yrs., g.r. 4*l.* 10s., w.r. 29*l.* 18s. 190

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beer-house; p.h. for public-house; o. for offices; s. for shops; ct. for court.

MEETINGS.

FRIDAY, MAY 27.

Royal Institution.—His Serene Highness Albert Prince of Monaco on "The Progress of Oceanography." 9 p.m.

SATURDAY, MAY 28.

Royal Institution.—Sir W. Martin Conway, M.A., on "Spitsbergen in the XVIIth Century," I. 3 p.m.

St. Paul's Ecclesiological Society.—Visit to Broxbourne.

MONDAY, MAY 30.

Surveyors' Institution.—The Annual General Meeting, to receive the Report of the Council and the announcement of the result of the Election of Officers for the ensuing year. 3 p.m.

TUESDAY, MAY 31.

Royal Institution.—Mr. H. F. Newall, M.A., F.R.S., on "The Solar Corona," II. 5 p.m.

WEDNESDAY, JUNE 1.

Royal Archæological Institute.—(1) Mr. C. R. Peers, M.A., F.R.S., on "The White Monastery, near Sohag, Upper Egypt." (2) Mr. Philip M. Johnston on "The Wall Paintings in Shorthampton Church, Oxfordshire." 4 p.m.

Builders' Foremen's and Clerks of Works' Institute.—Ordinary meeting of the members. 8 p.m.

FRIDAY, JUNE 3.

Royal Institution.—Professor Svante Arrhemus, of Copenhagen, on "The Development of the Theory of Electrolytic Dissociation." 9 p.m.

SATURDAY, JUNE 4.

Royal Institution.—Sir W. Martin Conway, M.A., on "Spitsbergen in the XVIIth Century," II. 3 p.m.

Northern Architectural Association.—Visit to West Hartlepool.

British Institute of Certified Carpenters.—The Annual Dinner, at the Holborn Restaurant. 7 p.m.

TO CORRESPONDENTS.

S. F. H.—A. S.—E. and C. (Amounts should have been stated).—F. W. C. (Below our limit).

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, manuscripts, or other documents, sent to or left at this office, unless he has specially asked for them.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and Quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£	s.	d.			
Hard Stocks	1	16	0	per 1000	alongside, in river.	
Rough Stocks and Grizzles	1	13	0	,,	,,	,,
Facing Stocks ...	2	12	0	,,	,,	,,
Shippers	2	10	0	,,	,,	,,
Flettons	1	10	0	,,	at railway depôt.	
Red Wire Cuts ...	1	13	0	,,	,,	,,
Best Fareham Red	3	12	0	,,	,,	,,
Best Red Pressed Ruabon Facing	5	0	0	,,	,,	,,
Best Blue Pressed Staffordshire ...	4	4	0	,,	,,	,,
Do. Bullnose	4	10	0	,,	,,	,,
Best Stourbridge Fire Bricks	4	8	0	,,	,,	,,
GLAZED BRICKS.						
Best White and Ivory Glazed Stretchers	13	0	0	,,	,,	,,
Headers	12	0	0	,,	,,	,,
Quoins, Bullnose, and Flats.....	17	0	0	,,	,,	,,
Double Stretchers	19	0	0	,,	,,	,,
Double Headers...	16	0	0	,,	,,	,,
One Side and two Ends	19	0	0	,,	,,	,,
Two Sides and one End	20	0	0	,,	,,	,,
Splays, Chamferred, Squints.	20	0	0	,,	,,	,,
Best Dipped Salt Glazed Stretchers, and Header	12	0	0	,,	,,	,,
Quoins, Bullnose, and Flats.....	14	0	0	,,	,,	,,
Double Stretchers	15	0	0	,,	,,	,,
Double Headers...	14	0	0	,,	,,	,,
One Side and two Ends	15	0	0	,,	,,	,,
Two Sides and one End	15	0	0	,,	,,	,,
Splays, Chamferred, Squints	14	0	0	,,	,,	,,
Second Quality, White and Dipped Salt Glazed	2	0	0	,,	less than best.	

BRICKS, &c.—(*Continued*).

	s.	d.		
Thames and Pit Sand.....	7	3	per yard,	delivered.
Thames Ballast.....	6	0	,,	,,
Best Portland Cement	30	0	per ton,	,,
Best Ground Blue Lias Lime	21	0	,,	,,

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime.....12s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 6d. per ton at rly. dpt.

STONE.

	s.	d.		
BATH STONE—delivered on road waggons, Paddington Depôt	1	6½	per ft. cube.	
Do. do. delivered on road waggons, Nine Elms Depôt	1	8½	,,	,,
PORTLAND STONE (20 ft. average)—				
Brown Whitbed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf...	2	1	,,	,,
White Basebed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf...	2	2½	,,	,,

	s.	d.			
Ancaster in blocks	1	11	per ft. cube,	deld. rly. depôt.	
Beer ,, ...	1	6	,,	,,	
Greenshill ,, ...	1	10	,,	,,	
Darley Dale in blocks...	2	4	,,	,,	
Red Corsehill ,,	2	5	,,	,,	
CloseburnRedFreestone	2	0	,,	,,	
Red Mansfield ,,	2	4	,,	,,	

YORK STONE—*Robin Hood Quality*

	s.	d.		
Scappled random blocks	2	10	per ft. cube,	,,
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	3	per foot super.	,,
6 in. rubbed two sides ditto, ditto	2	6	,,	,,
3 in. sawn two sides slabs (random sizes)	0	11½	,,	,,
2 in. to 2½ in. sawn one side slabs (random sizes)	0	7½	,,	,,
1½ in. to 2 in. ditto, ditto	0	6	,,	,,
HARD YORK—				
Scappled random blocks	3	0	per ft. cube,	,,
6 in. sawn two sides, landings to sizes (under 40 ft. super.)	2	8	per ft. super.	,,
6 in. rubbed two sides Ditto	3	0	,,	,,
3 in. sawn two sides (slabs random sizes)	1	2	,,	,,
2 in. self-faced random flags	0	5	,,	,,
Hopton Wood (Hard Bed) in blocks	2	3	per ft. cube.	
,, ,, ,, 6 in. sawn both sides landings	2	7	deld. rly. depôt per ft. super.	
,, ,, ,, 3 in. do.	1	2½	deld. rly. depôt ,,	,,

SLATES.

in.	in.		£	s.	d.	
20 × 10	best blue Bangor		13	2	6	per 1000 of 1200 at r. d.
20 × 12	,,	,,	13	17	6	,, ,,
20 × 10	first quality	,,	13	0	0	,, ,,
20 × 12	,, ,,	,,	13	15	0	,, ,,
16 × 8	,, ,,	,,	7	5	0	,, ,,
20 × 10	best blue Portmadoc		12	12	6	,, ,,
16 × 8	,, ,,		6	12	6	,, ,,
20 × 10	best Eureka unfading green .		15	17	6	,, ,,
20 × 12	,, ,,		18	7	6	,, ,,
18 × 10	,, ,,		13	5	0	,, ,,
16 × 8	,, ,,		10	5	0	,, ,,
20 × 10	permanent green		11	12	6	,, ,,
18 × 10	,, ,,		9	12	6	,, ,,
16 × 8	,, ,,		6	12	6	,, ,,

TILES.

	s.	d.		
Best plain red roofing tiles .	42	0	per 1000 at rly. depôt.	
Hip and Valley tiles	3	7	per doz.	,, ,,
Best Brosely tiles.....	50	0	per 1000	,, ,,
Do. Ornamental tiles	52	6	,,	,, ,,
Hip and Valley tiles ...	4	0	per doz.	,, ,,
Best Ruabon red, brown, or brindled do. (Edwards)	57	6	per 1000	,, ,,
Do. Ornamental do	60	0	,,	,, ,,
Hip tiles	4	0	per doz.	,, ,,
Valley tiles	3	0	,,	,, ,,
Best Red or Mottled Staffordshire do. (Peakes).....	51	9	per 1000	,, ,,
Do. Ornamental do.....	54	6	,,	,, ,,
Hip tiles	4	1	per doz.	,, ,,
Valley tiles	3	8	,,	,, ,,
Best "Rosemary" brand plain tiles.....	48	0	per 1000	,, ,,
Best Ornamental tiles	50	0	,,	,, ,,
Hip tiles	4	0	per doz.	,, ,,
Valley tiles	3	8	,,	,, ,,
Best "Hartshill" brand plain tiles, sand faced.	50	0	per 1000	,, ,,
Do. pressed.....	47	6	,,	,, ,,
Do. Ornamental do	50	0	,,	,, ,,
Hip tiles	4	0	per doz.	,, ,,
Valley tiles	3	6	,,	,, ,,

WOOD.	At per standard. £	s.	d.	£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in	15	10	0	16	10	0
Deals: best 3 by 4.....	14	10	0	15	10	0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11	10	0	12	10	0
Battens: best 2½ by 6 and 3 by 6 ..	0	10	0	less than 7 in. and 8 in.		
Deals: seconds	1	0	0	less than best		
Battens: seconds	0	10	0	,, ,,		
2 in. by 4 in. and 2 in. by 6 in....	9	0	0	9	10	0
2 in. by 4½ in. and 2 in. by 5 in....	8	10	0	9	10	0
Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in.	0	10	0	more than battens.		
¾ in.	1	0	0	,,		

WOOD.—(*continued*).

	At per load of 50 ft. £ s. d.	£ s. d.
Fir timber; best middling Danzig or Memel (average specification)	4 10 0	5 0 0
Seconds	4 5 0	4 10 0
Small timber (8 in. to 10 in.)	3 12 6	3 15 0
Small timber (6 in. to 8 in.)	3 0 0	3 10 0
Swedish balks	2 15 0	3 0 0
Pitch-pine timber (30 ft. average)	3 5 0	3 15 0

JOINERS' WOOD.	At per standard.	
White Sea: first yellow deals, 3 in. by 11 in	23 0 0	24 0 0
3 in. by 9 in.	21 0 0	22 10 0
Battens, 2½ in. and 3 in. by 7 in.	17 0 0	18 10 0
Second yellow deals, 3 in. by 11 in.	18 10 0	20 0 0
" " 3 in. by 9 in.	17 10 0	19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	15 10 0	16 10 0
Battens, 2½ in. and 3 in. by 7 in.	11 10 0	12 10 0
Petersburg: first yellow deals, 3 in. by 11 in.	21 0 0	22 10 0
Do. 3 in. by 9 in.	18 0 0	19 10 0
Battens	13 10 0	15 0 0
Petersburg: second yellow deals, 3 in. by 11 in.	16 0 0	17 0 0
Do. 3 in. by 9 in.	14 10 0	16 0 0
Battens	11 0 0	12 10 0
Third yellow deals, 3 in. by 11 in.	13 10 0	14 0 0
Do. 3 in. by 9 in.	13 0 0	14 0 0
Battens	10 0 0	11 0 0
White Sea and Petersburg :—		
First white deals, 3 in. by 11 in.	14 10 0	15 10 0
" " 3 in. by 9 in.	13 10 0	14 10 0
Battens	11 0 0	12 0 0
Second white deals, 3 in. by 11 in.	13 10 0	14 10 0
" " 3 in. by 9 in.	12 10 0	13 10 0
" " battens	9 10 0	10 10 0
Pitch-pine: deals	16 10 0	20 0 0
Under 2 in. thick extra	0 10 0	1 0 0
Yellow Pine—First, regular sizes	35 0 0	upwards.
Oddments	24 0 0	26 0 0
Seconds, regular sizes	26 10 0	28 10 0
Yellow Pine oddments	22 0 0	24 0 0
Kauri Pine—Planks, per ft. cube	0 3 6	0 5 0
Danzig and Stettin Oak Logs—		
Large, per ft. cube	0 2 6	0 3 6
Small " "	0 2 3	0 2 6
Wainscot Oak Logs, per ft. cube	0 5 0	0 5 6
Dry Wainscot Oak, per ft. sup. as inch	0 0 7	0 0 8
¾ in. do. do.	0 0 6½	—
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 9	0 0 11
Selected, Figury, per ft. sup. as inch	0 1 6	0 2 0
Dry Walnut, American, per ft. sup. as inch	0 0 10	0 1 0
Teak, per load	17 0 0	21 0 0
American Whitewood Planks—per ft. cube	0 4 0	—
Prepared Flooring—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 6	0 17 6
1 in. by 7 in. yellow, planed and matched	0 14 0	0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	1 0 0
1 in. by 7 in. white, planed and shot	0 12 0	0 14 6
1 in. by 7 in. white, planed and matched	0 12 6	0 15 0
1¼ in. by 7 in. white, planed and matched	0 15 0	0 16 6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0	0 13 6
¾ in. by 7 in. do. do. do.	0 14 0	0 18 0
1 in. by 7 in. white do. do.	0 10 0	0 11 6
1 in. by 7 in. do. do. do.	0 11 6	0 13 6

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	6 5 0 ...	7 5 0
Compound Girders, ordinary sections	8 2 6 ...	9 5 0
Angles, Tees and Channels, ordinary sections	7 17 6 ...	8 17 6
Flitch Plates	8 5 0 ...	8 15 0
Cast Iron Columns and Stanchions including ordinary patterns	7 2 6 ...	8 5 6

METALS.

	Per ton, in London. £ s. d.	£ s. d.
IRON—		
Common Bars	7 5 0 ...	7 15 0
Staffordshire Crown Bars, good merchant quality	7 15 0 ...	8 5 0
Staffordshire "Marked Bars"	10 0 0 ...	—
Mild Steel Bars	8 15 0 ...	9 5 0
Hoop Iron, basis price	9 5 0 ...	9 10 0
" " Galvanized	17 10 0 ...	—
(*And upwards, according to size and gauge.)		
Sheet Iron (Black)—		
Ordinary sizes to 20 g.	9 15 0 ...	—
" " 24 g.	10 15 0 ...	—
" " 26 g.	12 5 0 ...	—
Sheet Iron, Galvanised, flat, ordinary quality—		
Ordinary sizes—6 ft. by 2 ft. to 3 ft. to 20 g.	12 15 0 ...	—
Ordinary sizes to 22 g. and 24 g.	13 5 0 ...	—
" " 26 g.	14 5 0 ...	—
Sheet Iron, Galvanised, flat, best quality—		
Ordinary sizes to 20 g.	16 0 0 ...	—
" " 22 g. and 24 g.	16 10 0 ...	—
" " 26 g.	18 0 0 ...	—
Galvanised Corrugated Sheets—		
Ordinary sizes 6 ft. to 8 ft. 20 g.	12 10 0 ...	—
" " 22 g. and 24 g.	13 0 0 ...	—
" " 26 g.	13 15 0 ...	—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	11 15 0 ...	—
Best Soft Steel Sheets, 22 g. & 24 g.	12 15 0 ...	—
" " " 26 g.	14 0 0 ...	—
Cut nails, 3 in. to 6 in.	9 0 0 ...	9 10 0

(Under 3 in., usual trade extras.)

LEAD, &c.

	Per ton, in London. £ s. d.	£ s. d.
LEAD—Sheet, English, 3lb. and up	14 12 6 ...	—
Pipe in coils	15 2 6 ...	—
Soil pipe	17 12 6 ...	—
Compo pipe	17 12 6 ...	—
ZINC—Sheet—		
Vieille Montagne ...ton	27 5 0 ...	—
Silesian	27 0 0 ...	—
COPPER—		
Strong Sheet...per lb.	0 0 10½ ...	—
Thin " "	0 0 11½ ...	—
Copper nails "	0 0 11 ...	—
BRASS—		
Strong Sheet "	0 0 10 ...	—
Thin " "	0 0 11 ...	—
TIN—English Ingots "	0 1 4 ...	—
SOLDER—Plumbers' "	0 0 6½ ...	—
Tinmen's "	0 0 8 ...	—
Blowpipe "	0 0 9 ...	—

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2½d. per ft. delivered.
" fourths	1⅞d. " "
21 oz. thirds	3⅛d. " "
" fourths	2⅜d. " "
26 oz. thirds	4d. " "
" fourths	3¼d. " "
32 oz. thirds	5d. " "
" fourths	4¼d. " "
Fluted Sheet, 15 oz.	3d. " "
" 21 oz.	4d. " "
⅛ Hartley's Rolled Plate	1⅜d. " "
7/32 " " "	1⅞d. " "
¼ " " "	2⅛d. " "

OILS, &c.

	£ s. d.
Raw Linseed Oil in pipes or barrels . per gallon	0 1 5
" " in drums "	0 1 8
Boiled " in pipes or barrels . "	0 1 8
" " in drums "	0 1 11
Turpentine, in barrels "	0 3 7
" in drums "	0 3 9
Genuine Ground English White Lead per ton	19 0 0
Red Lead, Dry "	19 0 0
Best Linseed Oil Putty per cwt.	0 6 6
Stockholm Tar per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 10 0

PUBLISHER'S NOTICES.

Nat. Tel., 6112, Gerrard. Telegrams, "The Builder, London."

THE INDEX (with TITLE-PAGE) for **VOLUME LXXXV.** (July to December, 1903) was given as a supplement with issue of January 9 last.

CLOTH CASES for Binding the Numbers are now ready, price 2s. 6d. each; also

READING CASES (Cloth), with Strings, price 9d. each.

THE EIGHTY-FIFTH VOLUME of "The Builder" (bound), price Twelve Shillings and Sixpence.

SUBSCRIBERS' VOLUMES, on being sent to the Office, will be bound at a cost of 3s. 6d. each.

CHARGES FOR ADVERTISEMENTS.

COMPETITIONS, CONTRACTS, ALL NOTICES ISSUED BY CORPORATE BODIES, COUNTY AND OTHER COUNCILS, PROSPECTUSES OF PUBLIC COMPANIES, SALES BY TENDER, LEGAL ANNOUNCEMENTS, &c., &c.

Six lines, or under ... 6s. 0d.
Each additional line ... 1s. 0d.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE AND GENERAL ADVERTISEMENTS.

Six lines or under ... 4s. 6d.
Each additional line ... 0s. 6d.

Terms for series of Trade advertisements, and for front page, and other special positions, on application to the Publisher.

SITUATIONS WANTED (Single-handed—Labour only).

FOUR lines (about thirty words) or under ... 2s. 6d.
Each additional line (about ten words) ... 0s. 6d.

PREPAYMENT IS ABSOLUTELY NECESSARY.

*** Stamps must not be sent, but all sums should be remitted by Postal Orders, payable to J. MORGAN, and addressed to the Publisher of "THE BUILDER," Catherine Street, W.C.

Advertisements for the current week's issue are received up to THREE o'clock p.m. on THURSDAY, but "Classification" is impossible in the case of any which may reach the Office after HALF-PAST ONE p.m. on that day. Those intended for the Outside Wrapper should be in by TWELVE noon on WEDNESDAY.

ALTERATIONS IN STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same must reach the Office before TEN o'clock on WEDNESDAY MORNING.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c., left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

PERSONS advertising in "THE BUILDER" may have *Replies addressed to the Office*, Catherine Street, Covent Garden, W.C., *free of charge*. Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage. Unused stamps are returned to advertisers the week after publication.

AN EDITION Printed on THIN PAPER, for FOREIGN and COLONIAL CIRCULATION, is issued every week.

READING CASES { NINEPENCE EACH. By post (carefully packed) 1s.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted*. † Denotes *provisionally accepted*.

ABERGAVENNY.—For erecting four cottages in Lower Monk-street, for Mrs. Dodd. Mr. F. Baldwin, architect, 13, Frogmore-street, Abergavenny:—

W. C. Forward	£850 0 0	J. A. Price	£700 0 0
J. Williams	799 16 0		

BRAY.—For erecting forty-four workmen's cottages at Little Bray, for the Urban District Council. Mr. C. H. N. Sutter, Architect and Surveyor to the Council, Town Hall, Bray, Ireland. Quantities by Mr. W. Butler, Dublin:—

S. Worthington, Sandymount* ... £4,846

BRAY.—For erecting ten workmen's cottages adjacent to the Town Hall, for the Urban District Council. Mr. C. H. N. Sutter, Architect and Surveyor, Town Hall, Bray, Ireland. Quantities by Mr. W. Butler, 58, Mountjoy-square, Dublin:—

S. Worthington, Sandymount* ... £1,607

BRIGHTON.—For alterations and repairs and redrainage to Finsbury-road School, for the Education Committee. Messrs. T. Simpson & Son, surveyors, 17, Ship-street, Brighton:—

G. R. Lockyer	£3,824	W. Taylor	£3,472
Rowland Bros.	3,699	W. Olliver	3,375
Foster Bros.	3,555	J. & W. Simmonds, Ashford-road, Brighton‡	3,295
Cook & Sons	3,550		
J. Barnes	3,447		

‡ Recommended for acceptance.

CARDIFF.—For painting and renovating the interior of three ward pavilions at the Sanatorium, for the Corporation. Mr. W. Harpur, Borough Engineer, Town Hall, Cardiff:—

Gough Bros., Cardiff* ... £201

CWMMILES.—For erecting a stone bridge at Cwmmiles, near Login, Carmarthenshire, for the Whitland Rural District Council. Mr. D. E. Thomas, architect, Victoria-place, Haverfordwest:—

J. Rees & Sons	£910 0
D. Howell & Son, Llandowror, St Clears*	749 10

DEVONPORT.—For pulling down and rebuilding the White Lion public-house, King-street and Cannon-street, for Mr. W. Ford. Mr. Edgar M. Leest, architect, 14, St. Aubyn-street, Devonport. Quantities by Messrs. Leest & Adams, Devonport:—

Axworthy	£1,549 10 7	Stanbury	£1,340 0 0
G. H. Smith & Son	1,493 15 0	T. Jenkin & Son	1,333 0 0
Blake & Son	1,390 0 0	T. May	1,318 0 0
J. H. Palmer	1,355 0 0	Pearce Bros., Plymouth*	1,299 0 0
F. Watts	1,349 10 0		
Partridge	1,349 0 0		

DROITWICH.—For gas engine and vertical treble-ram pumping plant, etc. (Specification No. 2, Outfall Works), for the Corporation. Mr. H. Hulse, Borough Engineer, Droitwich:—

A. Dougill's Engineering Co., Ltd., Leeds* £626 15

DROITWICH.—For outfall works, etc. (Specification No. 1), for the Corporation. Mr. H. Hulse, Borough Engineer, Droitwich:—

J. Byard & Sons, Gloucester* ... £1,135 16

GREAT CROSBY.—For carriageway and footways, Bonds-lane, for the Urban District Council. Mr. Watkin Hall, Surveyor to the Council, College-road, Great Crosby:—

P. Balmer, Aintree, Liverpool ... £590 0 0
For Roadworks, Cook's-lane (kerbing, channelling, and flagging footway).
T. & J. Ellams, Great Crosby ... £73 6 10
For Roadworks, Alexandra-road (flagging footways).
J. & J. Gilbertson, Great Crosby ... £19 17 0

GREAT CROSBY.—For flagging back passages, Shaftesbury-road, for the Urban District Council. Mr. Watkin Hall, Surveyor to the Council, College-road, Great Crosby:—

P. Balmer, Aintree, Liverpool ... £140
[Alternative Tender if Council supply flags £80.]

HEREFORD.—For alterations and renovations at Herefordshire Training College for Women, for the Training College Committee of Herefordshire Education Authority. Mr. A. Dryland, County Surveyor, Shire Hall, Hereford. Quantities by architect:—

	A	B	C
E. W. Wilks	£268 0 0	£860 0 0	£468 0 0
W. Rowberry	232 14 10	805 1 3	551 4 11
Beavan & Hodges	258 0 0	847 0 0	453 10 0
T. Broad	255 0 0	696 0 0	588 0 0
J. C. Vaughan, Hereford*	237 18 11*	666 2 9*	544 1 9
Bolt, Davies & Co.*	220 0 0	— —	430 0 0*

A. Builder's work. B. Decorator, plumber, slating, engineer, etc. C. Extensions—all trades.

LLANISHEN.—For additions to Llanishen and Lisvane National Schools. Mr. H. D. Blessley, architect, 22, Trinity-street, Cardiff. Quantities by architect:—

A. J. Howell	£636 0 0	S. Hanson	£545 0 0
C. Beams & Nephew	610 0 0	Blacker Bros., Clive-road, Cardiff*	520 0 0
Gough Bros.	586 0 0	S. E. Williams	510 0 0
A. W. Cadwallader	568 14 6		

TENDERS—*Continued on page* 596.

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Required.	Premiums.	Designs to be Delivered
Church, John-street, Glasgow	Corporation of Glasgow	Not stated	No date.

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, &c., supplied by	Tenders to be Delivered
Tarring Dalmarnock Bridge, etc.	Joint Bridges Committee, Glasgow	T. Nisbet, Master of Works, City Chambers, Glasgow	May 28
Covered Bridge	.....	M. Nisbett, Architect, 122, George-street, Edinburgh	May 30
Fire Alarm Apparatus at Provided Schools	Tottenham Education Committee	W. H. Prescott, A.M.I.C.E., Coombes Croft Hse, 712, High-rd., T'ham	do.
Alterations, etc., Abbey Town School	Committee of Management	Oliver & Dodgshun, Architects, Carlisle	do.
Bakery, Cart House, etc., Meadow-st., Pontycymer	Industrial Co-operative Society	W. Thomas, Secretary, Pontycymer Stores	do.
Forty Fathoms of Baltic Yellow Deal, etc.	Dartford Guardians	J. C. Hayward, Clerk, Union Offices, Dartford	do.
Stoneware Pipes (Seconds) for Land Drainage	Edmonton U.D.C.	G. Eedes Eachus, Engineer, Town Hall, Edmonton	do.
525 Yards of Kerbing	Royston U.D.C.	J. Raley, Solicitor, Barnsley	do.
780 Yards of Channelling	do.	do.	do.
Cement'g Playgrounds, etc., Carville Sch'ls, Wallsend	Wallsend Corporation	G. Hollings, Borough Surveyor's Office, High-street, Wallsend	do.
Cementing Footpaths, Hunter's-road, Wallsend	do.	do.	do.
Extension of Outfall Sewer in River Tay	Dundee Town Council	W. Mackison, C.E., Municipal Offices, 91, Commercial-st., Dundee	do.
Shops, Market-street, Wigan	Sir F. S. Powell, Bart.	Heaton, Ralph, & Heaton, Architects, Wigan	do.
Street Watering Van	Clacton-on-Sea U.D.C.	Surveyor, Town Hall, Clacton	May 31
Removing 9,000 Cubic Yards of Earth, Thornley	Weardale Steel, etc., Co.	Colliery Office, Thornley Colliery	do.
Private Street Works	Guildford Town Council	C. G. Mason, Borough Surveyor, Tuns Gate, Guildford	do.
Additions, etc., to Cragg Hall, Mytholmroyd	.....	Empsall & Clarkson, Architects, Exchange-buildings, Bradford	do.
Painting Pine End of Welsh Baptist Chapel, Bedwas	.....	Mr. Lewis Miles	do.
Electric Light Installation, etc., Kingston Halls	Glasgow Corporation	A. B. M'Donald, City Engineer, 64, Cochrane-street, Glasgow	do.
Gates and Railings at New Cemetery	Hamilton Parish Council	J. B. Brodie, C.E., 136, Wellington-street, Glasgow	do.
Sixty Fathoms Swedish Yellow Deals, etc.	Eton Guardians	R. H. Barrett, Clerk, Slough, Bucks.	do.
Street Paving, Eaglescliffe	Stockton R.D.C.	J. Rodham, Surveyor, Finkle-street, Stockton-on-Tees	do.
Street Paving, Preston-on-Tees	do.	do.	do.
Additions to Shotton Colliery Stores	Sherburn Hill Co-operative Society	J. Walton Taylor, F.R.I.B.A., St. John-street, Newcastle	do.
Stores	Middlesbrough Corporation	A. Sockett, Town Clerk, Municipal-buildings, Middlesbrough	do.
Earthenware Pipes, etc.	Ashton-in-Makerfield U.D.C.	H. Niven, Engineer and Manager, Gas Works, Ashton	do.
Supplies, Waterworks Department	do.	do.	do.
Supplies, Gasworks Department	do.	do.	do.
Repaving Part of John-street, etc.	Crewe Town Council	G. Eaton-Shore, Borough Surveyor, Crewe	do.
Alterations, etc., to Castle View, Passage West, Cork	Dr. Beamish	W. H. Hill & Son, Architects, 28, South Mall, Cork	do.
Repairs, etc., at Court Henry Council School	Carmarthenshire County Council	W. D. Jenkins, County Education Architect, Llandilo	do.
Four Houses and Shop at Beamish, near West Pelton	.....	T. E. Crossling, Architect, Front-street, Stanley, R.S.O.	do.
Business Premises, Beamish, near West Pelton	.....	do.	do.
Two Houses at Bryncethin	Mrs. Rideout	J. Hurley, Architect, 10, Bridgen-road, Aberkenfig	do.
Alterations, Bodkin Ho., Otterburn, Northumberland	.....	J. Hartley, Architect, Skipton	do.
Repairing Tar Paving in Station-road	Steyning West R.D.C.	Office of Surveyor, High-street, Steyning	do.
Second Barn Flags and Grit Curbs	Manchester Tramways Committee	J. M. M'Elroy, Tramways Department, 55, Piccadilly, Manchester	do.
Shelter Hall, Western Lawns	Hove Corporation	H. H. Scott, Borough Surveyor, Town Hall, Hove	June 1
*Supply of Portland Cement and Flints	do.	do.	do.
Iron Fencing at Electric Light Station, Pier's-road	Handsworth U.D.C.	H. Richardson, Surveyor, Council House, Handsworth	do.
5-Ton Overhead Manual Travelling Crane	Blackpool Corporation	J. S. Brodie, Borough Engineer, Town Hall, Blackpool	do.
Paving Boal-street	King's Lynn Corporation	H. J. Weaver, Borough Surveyor, King's Lynn	do.
Street Works, Aldred-street, etc.	Failsworth U.D.C.	Surveyor's Office, Town Hall, Failsworth	do.
2,490 Tons of Steel Rails and Plates	Federated Malay States Railway	Crown Agents for Colonies, Whitehall-gardens, S.W.	do.
22 Tons Fish Bolts and Nuts, etc.	do.	do.	do.
Iron Fencing, etc.	Rathdown No. 1 R.D.C.	R. M. Butler, C.E., 12, Dawson-street, Dublin	do.
Station-road Paving	Stainland with Old Lindley U.D.C.	J. H. Walker, Surveyor, Council Office, Mechanics Hall, Stainland	do.
Painting Outside Woodwork at Workhouse	Wellington (Salop) Guardians	J. Jones, Clerk, Edgbaston House, Wellington	do.
Scavenging Work	Blaydon U.D.C.	R. Biggins, Sanitary Inspector, Offices of Council, Blaydon-on-Tyne	June 2
Steam Piping, etc., at Electricity Works	Batley Corporation	Borough Electrical Engineer, Batley	do.
Rebuilding Ship Inn, Portloe, Cornwall	.....	T. H. Andrew, Architect, 1, Trevarrick-villas, St. Austell	do.
Wesleyan Sunday School B'dings, Reepham, Norfolk	.....	Mr. Gibbs, Ironmonger, Reepham, Norfolk	do.
Fever Hospital at Wicklow	Hospital Committee	Patterson & Kempster, 95, Lower Leeson-street, Dublin	do.
Dispensary Residence, Ballyclough, Mallow	The Guardians	Clerk of Works, Bd. Room of Grdns., Ballyclough, Mallow, Irel'd	do.
Furnishing New Probationary House	Ipswich Guardians	J. H. Wild, Clerk, 19, Tower-street, Ipswich	do.
Additions, etc., to Laundry, St. John's Home	do.	H. J. Wright, Architect, 4, Museum-street, Ipswich	do.
*Laying Down Surface Water Drains	Kingston-on-Thames Corporation	Borough Surveyor, Municipal Offices, Kingston-on-Thames	do.
Painting and Distempering Council Schools	Bootle Corporation	Borough Engineer's Office, Town Hall, Bootle	June 3
Oak Fencing and Gates, Tanners-lane, Barkingside	Ilford U.D.C.	H. Shaw, Surveyor, Public Offices, Ilford, Essex	do.
Repairs to Schools, Upton Park	St. George-in-the-East Guardians	J. R. Browne, Clerk, Raine-street, Old Gravel-lane, E.	do.
Walls, Toolhouses, etc., Brierylaw Cemetery	Selkirk Parish Council	G. Somervel Carfrae, C.E., 1, Erskine-place, Edinburgh	do.
Chancel, St. Cuthbert's Church, Hebburn-on-Tyne	.....	M. Temple Wilson, Architect, Alnwick	do.
Waterworks, Harlech	Dendraeth R.D.C.	Foster & Co., Engineers, Portmadoc	do.
Alterations, etc., Sacriston Stores	Annfield Plain Co-operative Society	G. T. Wilson, Architect, 21, Durham-road, Blackhill	do.
Alterations, etc., Dipton Stores	do.	do.	do.
*Drainage to Four Houses, Bexley Heath	Foresters' Asylum Committee	Mr. Atlee, Foresters' Asylum, Bexley Heath	June 4
Two Dwelling Houses, etc., Stowe-street	Trustees of Milley's Hospital	W. Perry, 39-41, Bore-street, Lichfield	do.
Shopfront, etc., Bird-street, Lichfield	do.	do.	do.
Rebuilding King William IV., Brynmawr	T. Edwards	T. Roderick, Architect, Glebeland, Merthyr Tydfil	do.
Plastering, etc., at Griffin Hotel, Brynmawr	do.	do.	do.
Alterations at Royal Arms, Brynmawr	do.	do.	do.
Repairing, etc., the Clarence Hotel, Brynmawr	do.	do.	do.
Repairing, etc., the Rock Inn, Blackwood	Messrs. Buchan & Co.	do.	do.
Alterations, etc., to Scion Baptist Chapel, Maerdy	.....	R. Owen, 63, Griffiths-street, Maerdy, Glam.	do.
Repairs to Council Schools, Moulton	.....	A. E. Thomas, Verdin Technical Schools, Northwich	do.
Painting & Decoratg. Moulton, Schools, nr. Northwich	.....	do.	do.
Colliery Timber	South Hetton Coal Co.	J. R. Lambert, South Hetton, Sunderland	do.
Stores	N.E. Ry. Co.	E. H. Clark, Stores, Gateshead	do.
Telegraph Stores	do.	C. H. Ellison, Company's Telegraph Superintendent, York	do.
Rebuilding the Builder's Arms Hotel, etc.	Mr. E. Evans Bevan	J. Cook Rees, Architect, Neath	do.
Five Cottages, Old-road, Melincrythan	do.	do.	do.
Two Cyclone Dust-collecting Plants	Manchester Tramways Committee	J. M. M'Elroy, Tramways Department, 55, Piccadilly, Manchester	do.
Bolts, Nuts, Screws, Nails, Washers, etc.	do.	do.	do.
9-in. Sewer at Sleetburn	Brandon and Byshottles U.D.C.	Surveyor's Office, High-street, Langley Moor	do.
Villa Residence in Deer Orchard, Cockermouth	.....	J. Fleming, 2, Corn-market, Cockermouth	do.
Paving and Flagging Streets	Leeds Corporation	City Engineer's Office, Municipal-buildings, Leeds	June 6
Larne Waterworks Extension	Larne U.D.C.	W. G. Younge, Clerk, Town Hall, Larne	do.
Fifty-five Spans of 10 ft. Bridgework	Burma Railways Co., Ltd.	76, Gresham House, Old Broad-street, E.C.	do.
Ninety-three Spans of 20 ft. Bridgework	do.	do.	

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, &c., supplied by	Tenders to be Delivered
Girder Bridges	Bengal N.W. Ry. Co.	237, Gresham House, Old Broad-street, E.C.	June 6
Cast Crossings, etc.	Southampton Corporation	J. A. Crowther, Borough Engineer, Municipal Offices, Southampton	do.
Pipes and Castings	Fylde Water Board	W. Wearing, Engineer, 34, Victoria-street, Blackpool	do.
Dinnington Main Colliery Branch, Sidings and Works	S. Yorkshire Joint Line Committee	R. Elliott Cooper, 8, The Sanctuary, Westminster, S.W.	do.
River Wall, etc., on River Alyn, Mold	Alyn Steel Tinplate Co.	S. Evans, City Engineer and Architect, County-buildings, Mold	do.
Tak'g D'n, Removal, & Rebuilding Smallpox Hospital	Newburn U.D.C.	T. Gregory, Surveyor, Council Offices Newburn	do.
Flush Tank Cart	Warrington Paving Committee	Borough Surveyor, Town Hall, Warrington	do.
Recasting Bell at Cemetery Chapel	Warrington Cemetery Committee	do.	do.
Whitewashing Markets	Warrington Markets Committee	do.	do.
Station-master's House at Malahide	Gt. Northern Railway Co. (Ireland)	W. H. Mills, Engineer, Amiens-street Terminus, Dublin	do.
Road Materials	Fareham R.D.C.	Clerk, Union Offices, West-street, Fareham	do.
Reconstruction of Sea Walls, Goldcliff	Monmouthshire Comm'rs. of Sewers	T. Rees, Engineer, Corn Exchange-chambers, Newport	do.
Alterations, etc., Court Hall, Monkton	.....	E. H. Harbottle & Son, Architects, County-chambers, Exeter	do.
Outbuildings, Cloakrooms, and Infants' Room	Gillingham Hall Non-prov'd. Schools	A. Pells, F.S.I., Architect, Beccles	do.
*9,000 yds. Filtering Material, Earlswood Sewage W'rks	Borough of Reigate	Borough Engineer, Municipal-buildings, Reigate	do.
Making-up Private Streets	Leyton U.D.C.	W. Dawson, Surveyor, Town Hall, Leyton	June 7
Sewer, Union-road and Downsell-road	do.	do.	do.
Extensions to Central Premises	Boldon Industrial Corporation Soc.	Vaux & Mark, Architects, 66, John-st., Sunderland	do.
Sinking a Well, etc., Stirchley	King's Norton & Northfield U.D.C.	A. W. Cross, A.M.Inst.C.E., 23, Valentine-rd., King's Heath	do.
Road Improvements, Knowsley-road, etc.	Bootle Corporation	Borough Engineer's Office, Town Hall, Bootle	do.
Alterations, Castle Church, Egremont	.....	J. Cowan, Architect and Surveyor, Egremont, Cumberland	do.
*Making-up Roads	Tottenham U.D.C.	Council's Engineer, 712, High-road, Tottenham	do.
*Tar and Asphalte Paving Repairs	do.	do.	do.
*Inverting, etc., Moselle Brook	do.	do.	do.
*New County Court and Offices, Croydon	Commissioners of H.M. Works, etc.	Collector, Inland Revenue Office, Croydon	do.
*Asphalte Paving Portion of Hornsey-road	Metropolitan Borough of Islington	Borough Engineer, Town Hall, Upper-street, N.	do.
525 Tons of Broken Granite	Raunds U.D.C.	T. Yorke, Engineer & Surveyor, Raunds	June 8
560 Tons of Slag	do.	do.	do.
*Additional Story, Mat. W'ds., U. Edmonton W'khouse	Edmonton Union	T. E. Knightley, 106, Cannon-street, E.C.	do.
*Extension of Town Hall	Fulham Borough Council	Borough Surveyor, Town Hall, Fulham, S.W.	do.
Exten. of Club Premises, Lilycroft-rd., Manningham	.....	G. A. Firth, Architect, 9, Spring-gardens, Heaton, Bradford	June 9
Fifty Houses at Glyncorrwg, Cymmer, R.S.O.	Glyncorrwg Colliery Co.	T. Gibbs, Architect, Post Office-chambers, Port Talbot	do.
Wesleyan Methodist Church, Carukil, Redruth	Trustees	Sampson Hill, Architect, Green-lane, Redruth	do.
Classroom, etc., St. James' School, Hereford	.....	Nicholson & Hartree, Architects, Hereford	June 10
*New Coastguard Buildings at Leven, Fife	Admiralty	Director of Works Department, 21, Northumberland-avenue, W.C.	do.
Schools for 780 Children, Newport-road	Aldershot U.D.C.	F. C. Uren, C.E., Municipal-buildings, Aldershot	June 11
Infirmary, Exeter City Workhouse	Exeter Guardians	R. M. Challice, Architect, 14, Bedford-circus, Exeter	do.
Eight Houses at Stainland	.....	C. F. L. Horsfall & Son, Lord-street-chambers, Halifax	do.
Addit'ns, etc., Wesleyan Meth't Ch., Mitchell, Cornwall	.....	Sampson Hill, Architect, Redruth	do.
Steam Boilers at Granton Gasworks	Edinburgh Gas Commissioners	W. R. Herring, M.Inst.C.E., New-street Works, Edinburgh	June 13
Bridge over the River Wye at Brockweir	Bridge Committee	S. W. & A. L. Yockney, Eng'rs, 53, Victoria-st., Westminster, S.W.	do.
1,700 Tons of Granite	Plomesgate R.D.C.	T. Waller Read, Clerk, Board Room, Wickham Market	do.
500 Yards of Kent Ragstone	do.	do.	do.
*Erection of Bridge and Road Diversion Works	Erith U.D.C.	District Council Offices, Erith, Kent	do.
*Additions, etc., to Electric Light Station	do.	W. Egerton, 12, Queen's-road, Erith	do.
*Main Drainage Works	Esher and Ditton U.D.C.	Council's Engineer, Portsmouth-road, Thames Ditton	do.
*Workmen's Cottages and Making-up Rowsley-avenue	Hendon U.D.C.	Council's Engineer, Council Offices, Hendon, N.W.	do.
Extensions, etc., to Workhouse, Tredegar	Bedwellty Guardians	James & Morgan, Architects, Charles-street-chambers, Cardiff	June 14
Abbots Kerswell Water Supply	Newton Abbot R.D.C.	F. Horner, Clerk, Council Offices, Newton Abbot	do.
*Reconstruction of Bridges, etc.	Kent County Council	F. W. Ruck, County Architect, Maidstone	do.
*Additions to Technical Schools	Southend-on-Sea Corporation	Town Clerk, Southend-on-Sea	do.
*Additions, etc., Sewage Pumping Station & C.I. Sewer	Winchester Town Council	City Surveyor, Guildhall, Winchester	June 15
Library and Institute at Rhymney, Mon.	Workmen's Library	J. Llewellin Smith & Davies, Architects, Aberdare	June 16
Schoolrooms at Trecynon, Aberdare	Trustees of English Wesleyan Church	do.	do.
*New Coastguard Detachment, Speeton, Yorkshire	Admiralty	Director of Works Dept., 21, Northumberland-avenue, W.C.	June 17
*New Coastguard Buildings, Prawle Point, S. Devon	do.	do.	do.
12-Ton Compound Steam Road Roller	East Ashford R.D.C.	H. Hamilton, Clerk, 11, Bank-street, Ashford, Kent	June [illegible]
Drainage, Waterloo-place School, Hastings	Education Committee	C. A. Pigott, Architect, Saxon-chambers, London-rd., St. Leonards	do.
*Small Bridge at Rhydyllwyfar, Llanover	Abergavenny R.D.C.	J. Gill, Surveyor, 4, Brecon-road, Abergavenny	do.
*Cleansing, Repair, and Painting of Schools	C.B. of West Ham Education Com.	William Jacques, A.R.I.B.A., 2, Fen-court, Fenchurch-street, E.C.	do.
*Cleaning Windows	do.	do.	do.
*Elec. Wir'g & Fit'gs, West Ham Pk. Schools, Stratford	do.	do.	do.
Covered Service Reservoir at Watnall	Nottingham Water Committee	S. Moore, Water Offices, St. Peter's-square, Nottingham	June [illegible]
Covered Service Reservoir at Ramsdale Hill	do.	do.	do.
*Painting and Decorating Hoxton Public Library	Shoreditch Borough Council	Council's Surveyor, Town Hall, Old-street, E.C.	do.
Free Library, Corporation-street, Taunton	Taunton Corporation	G. H. Kite, Town Clerk, Municipal Offices, Taunton	June 22
*Enlargement of Schools	Wimbledon U.D.C.	The Clerk, Council Offices, Wimbledon, S.W.	June 23
Private Street Works	Levenshulme U.D.C.	J. Jepson, Guardian-chambers, Tiviot Dale, Stockport	June 24
Extension of North Pier, etc., Roundstone, Galway	Office of Public Works, Dublin	H. Williams, Secretary, Office of Public Works, Dublin	do.
Breakwater and Cattle Slip, Cleggan, co. Galway	do.	do.	do.
Extension of Old Pier, Kilronan, co. Galway	do.	do.	do.
*River Wall and Embanked Wharf, Belvedere-rd., S.E.	Borough of Lambeth	Henry Edwards, C.E., 346, Kennington-road, S.E.	June 30
Painting Premises at Prudhoe	.....	West Wylam and Prudhoe Co-operative Society Offices, Prudhoe	No date.
Fireproof Floors, Staircases, etc., Carlisle	Her Majesty's Theatre Directors	J. F. H. Harriman, Architect, 26, Castle-street, Carlisle	do.
Brickwalling, etc.	do.	do.	do.
Twelve Houses, Greystone-road, Carlisle	Mr. J. Little	J. Slack, Architect, 18, Bank-street, Carlisle	do.
School for 400 Boys	Hereford Education Authority	T. Lewis, Clerk, Hereford	do.
Additions to "The Enterprise," Farnborough	Lieut.-Col. Carlyon	Tredenham Lodge, Alexandra-road, Farnborough	do.
Pulling Down Part of "Field Place," Compton	.....	W. G. Lower, Architect, 12a, High-street, Guildford	do.
Small Farmhouse, Little Green, Kingsland	.....	E. L. Wallis, Solicitor, Hereford	do.
Four Houses, Pitsmoor, Sheffield	.....	R. Mitchell, 17, Haymarket-chambers, Sheffield	do.
C.I. and Steel and Concreter Work at stores	Meltham Industrial, etc., Society	W. Carter, Architect, Station-street, Meltham, near Huddersfield	do.
Five Houses in Allen-road, Urmston	.....	G. Westcott, Architect, 11, King-street West, Manchester	do.
Rebuilding the Coach and Horses, Nessgate, York	.....	Bromet & Thorman, Architects, Tadcaster	do.
Wesleyan Chapel, Bony Lodge, Barton-on-Humber	.....	Mr. Beacock, Wesley Chapel, Barton-on-Humber	do.
*Painting, etc., Royal Artillery Barracks, Weedon	War Office	Royal Engineer Office, Colchester	do.
Alterations to Latrines at Schools	Newcastle-on-Tyne Education Com.	A. Goddard, Sec., Educa'on Offices, Northumberland-rd., Newcastle	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in
*Clerk of the Works	Banbury Education Committee	Not stated	June 1
*Clerk of Works	All Saints Ch. (Hertf'd) Bldg. Com.	3*l.* 3s. per week	June 2
*Clerk of the Works	Daventry R.D.C.	2*l.* 10s. per week	do.
*Measuring Clerk	Camberwell Borough Council	140*l.*	do.
*Draughtsman	Straits Settlements Government	360*l.*, etc.	June 7
*Head of Engineering Department	Northern Polytechnic	275*l.*	June 8
*Teacher of Cookery	do.	110*l.*	do.
*Teacher of Architectural Drawing	do.	Not stated	do.
*Teacher of Brickwork	do.	Not stated	do.
*Surveyor of Highways	Croydon R.D.C.	400*l.*	June 9

Those marked with an asterisk (*) are advertised in this Number. *Competitions*, —. *Contracts*, lv. vi. viii. x. xii. *Public Appointments*, xviii.

TENDERS.—*Continued from page* 593.

LEATHERHEAD.—For road improvements, part of Kingston main road, for the Urban District Council. Mr. T. Salkield, Engineer and Surveyor, Council Offices, Leatherhead :—

	A.	B.	
T. W. Pedrette	£4,442	£296	£4,738
B. Cooke & Co.	4,421	298	4,719
G. Wimpey & Co.	4,425	253	4,678
Cunningham, Forbes, & Co.	4,421	209	4,630
T. Adams	4,247	269	4,516
S. Kavanagh & Co.	4,189	250	4,439
A. T. Catley	3,815	230	4,045
T. Free & Sons	3,642	358	4,000
E. Iles	3,685	250	3,935
J. May*	3,650	222	3,872

A. Kingston-road improvement. B. Randall-road corner.

LONDON.—For forming and paving as a new street portion of Invicta-road, for the Greenwich Borough Council :—

H. Woodham & Sons	£429	0	0
Fry Bros.	401	16	0
A. E. Etheridge (trading as J. E. Etheridge)	384	7	0
J. Mowlem & Co., Ltd.*	349	0	0

LONDON.—For painting, distempering, general repairs, etc., at Infirmary, Fulham-road, S.W., for the Guardians of St. George's Union. Mr. W. H. Chappell, clerk of the works :—

			Holliday & Greenwood, Ltd.	£840	0	0
B. E. Nightingale	£1,045	0 0				
Vigor & Co.	1,020	0 0	J. Scott Fenn	798	15	0
J. J. Richards	989	0 0	G. McArthur	789	0	0
F. W. Harris	975	0 0	Wontner & Co., Ltd.	717	0	0
P. McCarthy	914	0 0	M. McCarthy, King's-road, Clapham*	687	0	0
R. Woolaston & Co.	882	0 0				

LONDON.—For providing and laying new fire mains, hydrants, etc., at the St. John's-road Workhouse, Upper Holloway, N., for the Guardians of the Poor of the parish of St. Mary, Islington. Mr. William Smith, architect, 65, Chancery-lane, W.C. :—

			Wenham & Waters	£1,610
Simmons	£3,828			
Reason	1,897		Blakeborough & Sons	1,572
Merryweather	1,798			
May	1,793		Harding & Son*	1,524
Richmond	1,767			

LONDON.—For forming and paving as a new street St. George's-road, for the Greenwich Borough Council:—

H. Woodham & Sons	£537	0	0
Fry Bros.	503	1	8
A. E. Etheridge (trading as J. E. Etheridge)	497	4	5
J. Mowlem & Co., Ltd., of Grosvenor Wharf, Westminster*	475	0	0

LONDON.—For paving works, for Westminster City Council. Mr. J. W. Bradley, C.E. :—

Wood Paving.

Acme Wood Flooring Co.
Wm. Griffiths & Co., Hamilton House, Bishopsgate-street Without*
Improved Wood Pavement Co., Queen Victoria-street*
Mowlem & Co., Ltd., Grosvenor Wharf, Westminster*
} Schedule of Prices.

Asphalte Paving.	Per sq. yd.
Brea Asphalte Co.	13/8
French Asphalte Co.	11/- to 12/-
Limmer Asphalte Co.	11/6 to 13/-
Trinidad Lake Asphalte Co., Laurence Pountney Hill*	10/6 to 11/6
Val de Travers Asphalte Co.	11/3 to 12/6

LONDON.—For painting, cleaning, redecorating, and sundry repairs to South Branch Library, Wandsworth Bridge-road, for the Fulham Borough Council. Mr. F. Wood, Borough Engineer, Town Hall, Fulham :—

The tender of the Borough Surveyor for £190 17s. 6d. was accepted.

NEW TREDEGAR.—For lowering road near Old Whiterose stable, for Bedwellty Urban District Council. Mr. J. H. Lewis, Surveyor, Blackwood, Mon. :—

W. Lewis, Cefn-road, Brithdir, near Cardiff £145 16 9

PLYMSTOCK.—For laying sewer pipes and constructing tanks and outfall works at Lower Hooe, for Plympton St. Mary Rural District Council. Mr. F. A. Clark, Engineer, 83, Old Town-street, Plymouth :—

J. Budge, 24, High-street, Stonehouse, Devon, £774.

SHERINGHAM.—For premises for the Sheringham Co-operative Society. Mr. T. Inglis Goldie, architect, Norwich and Sheringham :—

T. Gill	£697 0	W. Porter	£563 6
G. A Lines	595 0	H. Bullen	550 0
Girling & Smith	588 0	G. Riches	549 0
J. W. Weston	575 2	C. A. Sadler, Sheringham*	497 0
A. S. Lincoln	569 0		

[Architect's estimate, £550.]

SHREWSBURY.—For alterations and additions at Shrewsbury Borough Technical School, Abbey Foregate, for the Borough Council. Mr. W. Chapple Eddowes, Borough Surveyor, The Square, Shrewsbury :—

G. Bullock, Shrewsbury* £197

TORMARTIN (Chippenham).—For work at Tormartin Rectory, for the Rev. T. J. Bowen. Mr. C. E. Ponting, Diocesan Surveyor, Marlborough :—

			Highman Bros	£496	16	0
R. Wilkins & Sons	£787	0 0				
W. Cowlin & Son	505	0 0	Orchard, Tormartin*	475	0	0
			Webb	350	0	0

TOTTENHAM.—For making-up Hendrick's-terrace, for the Urban District Council. Mr. W. H. Prescott, Engineer, Coombes Croft House, 712, High-road, Tottenham :—

			Grounds & Newton	£268	8	6
E. Frost	£296	8 5				
T. Adams	281	3 10	E. T. Bloomfield*	255	13	7
C. Bloomfield	280	1 5				

[All of Tottenham.]

TREDEGAR.—For erecting thirty four houses, for the United Building Society. Mr. W. S. Williams, architect, Tredegar :—

W. Owen, Walter-street, Tredegar, £180 each for thirty-four houses.

B. NOWELL & Co.,

Stone Merchants & Contractors.

Chief Office.—Warwick Road, KENSINGTON.

Norway, Guernsey, and Leicestershire Granite, Kerb, Pitching, and Yorkshire Stone.

ESTIMATES GIVEN FOR EVERY DESCRIPTION OF ROAD MAKING.

W. H. Lascelles & Co.

121, BUNHILL ROW, LONDON, E.C.

Telephone No. 1365 London Wall.

HIGH-CLASS JOINERY,
LASCELLES' CONCRETE.

Architects' Designs are carried out with the greatest care.

CONSERVATORIES,
GREENHOUSES,
WOODEN BUILDINGS,

Bank, Office, and Shop Fittings.

CHURCH BENCHES & PULPITS.

ESTIMATES GIVEN ON APPLICATION.

THE BATH STONE FIRMS, Ltd.
BATH.
FOR ALL THE PROVED KINDS OF
BATH STONE.
FLUATE, for Hardening, Waterproofing, and Preserving Building Materials.

HAM HILL STONE.
DOULTING STONE.
The Ham Hill and Doulting Stone Co.
(Incorporating the Ham Hill Stone Co. and C. Trask and Son, The Doulting Stone Co.)
Chief Office :—Norton, Stoke-under-Ham, Somerset.
London Agent :—Mr E. A. Williams, 16, Craven-street, Strand.

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 42, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. Asphalte Contractors to the Forth Bridge Co.

SPRAGUE & CO., Ltd.,
LITHOGRAPHERS AND PRINTERS.
Estate Plans and Particulars of Sale promptly executed.
4 & 5, East Harding-st., Fetter-lane, E.C.

QUANTITIES, &c., LITHOGRAPHED accurately and with despatch. [Telephone No. 434 Westminster.
METCHIM & SON { 8, PRINCES STREET, S.W. and 22, CLEMENT'S LANE, E.C.
"QUANTITY SURVEYORS' DIARY & TABLES," For 1904, price 6d., post 7d. In leather 1/-, post 1/1.

GRICE & CO., STONE MERCHANTS,
ADDISON WHARF, 191, Warwick Rd., KENSINGTON,
FOR ALL THE BEST
Building & Monumental Stone
One of the Largest Stocks and Greatest Variety of Stones in London. Estimates given for large or small Quantities in Block, Slabs, Copings, Sills, Steps, Kerbs, Headstones, Ledgers, etc., delivered in London or Country. Quarry Worked Stone a Speciality.

PILKINGTON & CO
(ESTABLISHED 1838.)
MONUMENT CHAMBERS,
KING WILLIAM STREET, LONDON, E.C.
Telephone No., 6319 Avenue.

Registered Trade Mark.
Polonceau Asphalte.
PATENT ASPHALTE and FELT ROOFING.
ACID-RESISTING ASPHALTE.
WHITE SILICA PAVING.
PYRIMONT SEYSSEL ASPHALTE.

THE CURE FOR SMOKY CHIMNEYS

EWART'S "EMPRESS" SMOKE CURE

DURING AN EXPERIENCE OF 70 YEARS WE HAVE FOUND NO SMOKE CURE SO SUCCESSFUL AS THE "EMPRESS"

PREVENTS DOWN-BLOW
INCREASES UP-DRAUGHT

EWART & SON LIMITED
346-350 EUSTON ROAD LONDON N.W.
WRITE FOR CATALOGUE "SECTION 55" POST FREE.